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1925

THE
Origin and Significance
OF
POSTURAL (ORTHOSTATIC) ALBUMINURIA.

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F.R.C.P. LOND.,

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BY the term postural (or orthostatic) albuminuria I mean nothing more than an albuminuria which develops in the upright position and ceases when the patient lies down. It is commonly used to imply a special form of albuminuria, "functional" or mechanical in origin, constituting a more or less defined clinical condition and tending to affect a special type of patient—children or young adults, often of poor physique, with low blood pressure and cold extremities, excreting globulin in excess of albumin. Whilst admitting the convenience of using the name only for the cases in which urine secreted in bed is free from albumin, I do not agree that the condition is always "functional" in nature, or is to be found in any particular type of patient, and I think that the limitation of the conception of the effect of posture on albumin excretion to the cases in which the bed urine is entirely free from albumin robs the symptom, as I would prefer to regard it, of much of its significance. The object of this paper, the outcome of five years' study of the subject, is to bring forward evidence in favour of the view that many cases of purely orthostatic albuminuria are the result of infection, and secondly to establish the point that the orthostatic reaction, in the true sense of the term, is common alike to the supposedly functional cases and to most, if not all, cases of nephritis, and, indeed, possibly to most forms of albuminuria.

In the *Quarterly Journal of Medicine*, January, 1923, I published a study of a series of cases of orthostatic albuminuria, based upon graphic records of the albumin output. The results were not altogether in accordance with the views usually held as to the functional nature of these cases, and it was especially noted that the orthostatic response, in nearly all its features, was met with in certain cases of mild nephritis. On this, as well as on other grounds, the provisional suggestion was made that orthostatic albuminuria might, in some instances at any rate, be the outcome of a past renal infection of mild degree. Since writing that paper I have continued to investigate all the cases of the condition occurring in my wards and in private practice, and I have now some fresh evidence to offer in support of the suggestion.

METHOD OF MEASUREMENT OF ALBUMIN.

The albumin measurements recorded in the *Quarterly Journal* and in the present communication have all been obtained by the method of estimation described in detail in the former paper, and more briefly in THE LANCET of Oct. 27th, 1923. Its advantages are that it makes possible the measurement of any quantity of albumin, down to the smallest trace. It would take too long to repeat here the description of the method. I may merely say that it depends upon the number of dilutions needed to reduce a cloud of coagulated albumin to the point at which it matches a standard haze. Further that the standard I now use is made by mixing together half a cubic centimetre each of a 0·014 per cent. solution of barium chloride and magnesium sulphate respectively, and adding, after the haze has developed, 10 c.cm. of distilled water pigmented so as to imitate the colour of a pale urine. (The solutions are kept in bottles previously treated with strong hydrochloric acid in order to neutralise the alkali of the glass.) The haze so produced constitutes the "unit" of albumin, and is practically the smallest haze recognisable in a good light against a dark background. For various reasons it is inadvisable to assign to the unit any absolute value. The object aimed at is the study of the relative output of albumin under different conditions and at different times; the absolute amount passed is rarely a matter of importance. Indeed, it is open to each observer to work with the unit with which he feels that he can obtain the most accurate results, and with myself this is the smallest recognisable haze. Although, in order to save reproduction, only two charts are included in this paper, all the cases recorded have been studied by means of exact observations obtained in this manner.

THE ORTHOSTATIC REACTION.

I will not burden my paper with any long account of the natural history of the orthostatic reaction. It will be enough to enumerate the chief features, as follows: The urine secreted in bed is ordinarily free from albumin, whilst that of the upright position is more or less albuminous, the amount of albumin varying directly with the time spent in the upright position, and in inverse direction, though not, I think, exactly in inverse amount, with the quantity of urine in process of secretion. Artificial lordosis, produced in bed by means of pillows, may or may not give rise to the passage of albumin, but standing upright usually, and standing in the position of lordosis invariably, produces an albuminuria, except during a period of diuresis. Standing in the leaning forward position abolishes the excretion of albumin.

SOURCES OF FALLACY.

There are two sources of fallacy with which I must deal before recording my evidence, inasmuch as they often interfere with the recognition of cases that are strictly orthostatic in nature, and one, at least, may easily lead to misinterpretation of my results.

(1) It is usually held that the urine passed immediately on getting out of bed by a patient suffering from orthostatic albuminuria is invariably free from albumin, and that any deviation from this behaviour excludes the case from the orthostatic group. But this statement is untrue of many genuine cases, and for an obvious reason. The albuminuria set going by the upright position continues, and sometimes increases, for half an hour or more after the return to bed, and Chart 1 shows what often happens when a patient, the subject of a postural albuminuria, gets out of bed, stands for a few minutes, and then resumes the lying-down position. In this case a boy with an obvious orthostatic albuminuria got out of bed and passed albumin-free urine. He then stood for seven minutes, returned to bed, and passed urine as soon as possible afterwards. This urine was highly albuminous. Twenty minutes later he again passed urine, being still in bed, and this urine was yet more albuminous than before. An hour after the return to bed a trace of albumin was still present. An actual increase in the albumin excretion on lying down does not always occur, and probably does not take place at all when the patient goes to bed at the end of the day with a definite albuminuria. (This he generally does, for the cessation of the albuminuria during the late afternoon and evening, supposed to characterise the orthostatic cases, is, according to my experience, altogether the exception.) But the albuminuria with which he goes to bed continues for half an hour or more after lying down, though gradually diminishing, and the retention in the bladder of this albuminous urine contaminates the night's collection and registers itself in the morning urine as a definite haze. The case is then apt to be wrongly rejected as one in which the albuminuria is not of the orthostatic variety.

This point is of sufficient importance to bear illustration by two cases.

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* An obituary notice of the late Dr. Russell, who died shortly after this paper reached us, appears in another column.—ED. L.

A lad, aged 16, in whom an albuminuria had been discovered on routine examination preliminary to application for admission into the Air Force, was admitted into the Birmingham General Hospital under Dr. L. G. Parsons, to whom I am indebted for the opportunity of examining him. The albuminuria had been regarded as almost certainly of the postural variety, but a small amount of albumin had been persistently present in the night's collection of urine—he was up and about all day. On May 2nd–3rd the following observations were made :—

	c.cm. urine.	Albumin units.
9 P.M.—On going to bed	20	375
11 P.M.—Two hours after lying down	120	18
7 A.M.—On getting up	230	0
9 A.M.—Two hours up	30	220

On this occasion the bladder was emptied afresh two hours after going to bed and the morning urine was then free from albumin. Had the 11 P.M. urine been retained, the morning specimen would have contained from 6 to 7 units of albumin, a small, but quite recognisable haze.

CHART 1.

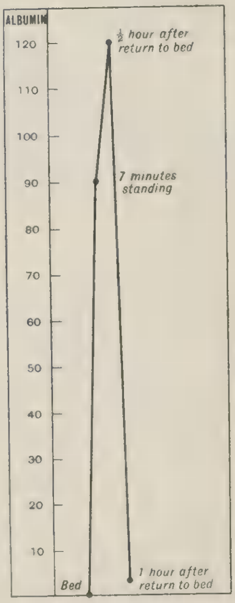
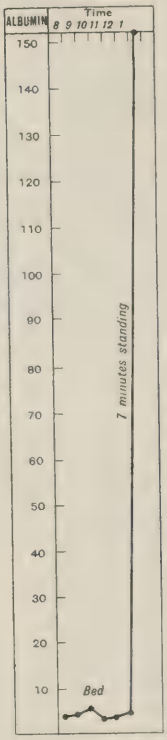


CHART 2.



The second case was that of a girl, aged 11, who was in my ward in May, 1924, with a postural albuminuria of large degree. A year later she was readmitted for further investigation, and now the morning urine regularly contained a haze of albumin. But on April 11th, after being up all day, she went to bed with an albuminuria of 90 units, and an hour later was made to pass urine again. Next morning the night's collection was entirely free from albumin.

This source of fallacy will receive further illustration in others of my cases. It is one that is not, I think, generally recognised, but unless it is kept in mind many strictly orthostatic cases will pass undiagnosed.

(2) The second source of fallacy lies in the fact that during diuresis the upright position loses its effect on the excretion of albumin. For this reason in a suspected orthostatic case it is never safe to depend upon the absence of albumin from a single plentiful specimen of urine. And even in the absence of diuresis it must always be remembered that the sitting posture also abolishes the albuminuria.

INFECTIVE ORIGIN OF MANY CASES OF ORTHOSTATIC ALBUMINURIA.

In the paper already referred to the first case studied was that of a girl in whom the albuminuria had first been discovered immediately after an attack of diphtheria. I have now to bring forward evidence pointing to a connexion between the orthostatic condition and a past attack of scarlet fever. I am aware that the origin of the condition in a former attack of scarlatinal nephritis has often been suggested, but, as will be seen, that is not exactly my contention.

CASE 1.—I am indebted to Dr. H. Savage, my former house physician, for bringing this case to my notice, and for permission to publish the details. The patient was a girl, aged 8, who was seen by him when in practice in Coventry. Two months previously the child had been admitted into the Fever Hospital with an attack of scarlet fever, and she was discharged at the end of six weeks, without any known abnormality of the urine. A week after her return home she was brought to Dr. Savage with œdema of the left leg and the left side of the face ; the urine contained a thick cloud of albumin, and casts were found in the deposit. The girl was put to bed, and the œdema and albuminuria at once came to an end. After a further period of rest in bed the œdema did not return on getting up, but from that time, whilst the bed urine was invariably free from albumin, 10 minutes' standing always produced a definite cloud. On Dec. 2nd, 1923, some four months after the onset of the fever, two specimens of urine were brought to me for examination. One, passed immediately after getting out of bed in the morning, was quite free from albumin. The other, passed soon after standing upright for 10 minutes, contained 110 units, a fairly thick cloud. On occasions, during the next 12 months, further specimens were examined with the same result, but by the end of 1924 the immediate response to standing had practically ceased. Whether or not the urine of the rest of the day was albuminous I do not know, as the case passed out of reach.

CASE 2 was that of a young man, aged 25, who contracted scarlet fever in the army in 1918. He was treated for six weeks in the Fever Hospital, and was discharged without any suspicion of renal disease. A fortnight later he was examined for some routine purpose and albumin was discovered in the urine, and eventually he was discharged from the army with the diagnosis of nephritis. From that time onwards his doctor had found an "intermittent albuminuria." He consulted me in May, 1925. The blood pressure was 85/142, but I thought that the rather high systolic reading might be partly the result of excitement. The heart was not recognisably enlarged and I could find no casts in the urinary deposit. On May 23rd he sent me a series of specimens of urine passed at hourly intervals throughout the morning, together with one passed on going to bed the night before, with the following results :—

	c.cm. urine.	Albumin units.
11 P.M.—On going to bed	42	90
8 A.M.—On getting up	300	6
9 ,, ...	35	70
10 ,, ...	46	65
11 ,, ...	40	70
12 noon	55	36
1 P.M.	50	28

The trace of albumin in the early morning specimen is easily explained by the fact that the urine was heavily loaded at bedtime the night before, and the bladder had not been emptied again during the night.

The two following cases suggest that a definite scarlatinal nephritis may ultimately be represented by a postural albuminuria.

CASE 3.—A girl, aged 13, was sent into my ward on account of an albuminuria discovered in the out-patient room. Two years previously she had had an attack of scarlet fever and her mother was informed that the kidneys were slightly affected and that the urine was "not quite right." The albuminuria was entirely postural in occurrence, though the immediate response to standing was but slight.

CASE 4 was that of a young man, aged 24, who consulted me for "nephritis." At the age of 10 he had had an attack of scarlet fever which was not at first diagnosed. In consequence he went about for some days and a nephritis developed. From that time albumin had been almost always found in the urine, and a year ago a very serious prognosis had been given. When I saw him in May, 1924, he was somewhat pale and complained of being easily tired. The heart was not enlarged and the blood pressure was 80/130. The urine passed in my room contained a cloud of albumin, but neither in this specimen nor in others subsequently examined was I able to find any casts. Next morning the urine passed on getting out of bed contained 8 units of albumin, and 10 minutes' standing produced a dense cloud of over 500 units. On other occasions the same trace of albumin was found in the bed urine, but that this was due to the continued excretion of albumin during the first period after getting to bed at night is shown by the fact that on one occasion when the bladder was emptied afresh an hour after lying down the urine next morning was absolutely albumin-free.

Post-Scarlatinal Orthostatic Albuminuria.

These cases seem to suggest, not only that a scarlatinal nephritis may eventually be represented by a postural albuminuria, but that the same condition may sometimes occur after an attack of scarlet fever in which no question as to the soundness of the kidneys has been raised during the period of retention in bed, and I thought that some further information might be obtained at the fever hospital. I accordingly took the problem to Dr. E. H. R. Harries, the medical superintendent of the Birmingham Fever Hospitals, and he most kindly gave me every facility for investigating the matter. He referred me to Dr. W. M. MacFarlane, the medical superintendent of the Lodge-road Scarlet Fever Hospital, to whom I am much indebted for placing two children's wards at my disposal, as I am also to the sisters and nurses in charge of the wards for much trouble taken in procuring the necessary specimens. Dr. MacFarlane allowed me to examine a series of specimens of urine passed some three hours after getting up in the morning by a number of children convalescent from scarlet fever, none of whom had shown any sign of albuminuria so long as they had remained in bed. On the first occasion on which this was done 16 urines were collected for my examination, and of these four contained a material quantity of albumin. Three of the albuminurias proved to be fleeting; at any rate, no albumin was discovered in any of the three two days later. But the fourth gave on that day a definite response to the standing test, the bed urine being albumin-free, and an hour later a larger albuminuria had developed. This boy went home next day, the subject, for the time at all events, of a moderate postural albuminuria.

I have now examined the urines of 83 of these children, the conditions being exactly similar in each case. Of these 83 urines, 22 contained a considerable quantity of albumin on the first examination; I have omitted several others in which the amount of albumin was very small. Seven of the 22 patients went home to my knowledge with an albuminuria of the orthostatic type, found to be present on more than one occasion, and I have added to the list five others in whom discharge from hospital prevented me from making more than one examination. The rest I have discarded—three because no albumin was found on a second examination, and others because the second examination showed only a small amount. In discarding all these I am probably altogether understating my case, for a single negative or slight result is rarely safe ground for excluding an orthostatic albuminuria, but it is better to err on that side. What has especially struck me has been the unvarying regularity with which these albuminurias have been found. I paid in all nine visits to the fever hospital and examined on an average nine urines at each visit. There was not a single occasion on which I did not obtain from two to four or more positive results. As will later be stated, such results have not been obtained in examinations made in other conditions. Particulars of the cases that have not been discarded are as shown in the table fo'lowing.

The slight bed albuminurias noted on single occasions in Cases 3, 4, 5, and 7 have probably the usual explanation of contamination by the albumin excreted shortly after getting to bed the night before, for in all these cases on another day, or on other days, this urine has been found to be free from albumin. Case 9, with a slight bed albuminuria, rests on a single examination, but the same explanation probably holds. It has not been possible, however, to put the explanation to the proof which I have applied to such cases in my own wards. It is further to be regretted that I have not so far been able to follow up the after-history of these cases. There are considerable difficulties in the way, but, should opportunity offer, I shall avail myself of it. It may be, of course, that some or even all of the albuminurias may have cleared up after the return home, and this gap in the evidence is unfortunate. But the results may fairly be looked at in connexion with the first and second of my recorded cases. In these an exactly comparable orthostatic albuminuria was discovered a week and a fortnight respectively after discharge from hospital, and the albuminuria is known to have persisted for at least a year in the one case and for seven years in the other.

No. of case.	—	Units of albumin in bed urine.	Units of albumin after getting up.
1	May 24th	—	Cloud (not measured).
	,, 26th	0	9 after standing.
			20 an hour later.
2	June 7th	0	240 3 hours up.
	,, 14th	0	75 1 P.M.
			11 4 P.M.
			13 7.30 P.M.
3	,, 7th	0	130 3 hours up.
	,, 8th	0	100 1 P.M.
			50 4 P.M.
			40 7.30 P.M.
4	,, 20th	35	380 3 hours up.
	,, 28th	0	100 ,,
	July 5th	0	100 ,,
5	June 28th	0	130 ,,
	July 5th	0	140 ,,
	,, 12th	7	95 ,,
	,, 19th	0	160 ,,
6	June 28th	—	180 2 hours up.
	July 7th	0	55 3 hours up.
7	,, 12th	9	120 ,,
	,, 19th	0	7 ,,
			(Urine plentiful).
8	,, 12th	0	300 3 hours up.
9	,, 12th	15	210 ,,
10	,, 25th	0	60 ,,
11	,, 25th	0	36 ,,
12	,, 25th	0	48 ,,

These cases seem to establish the fact that patients who have passed through an attack of scarlet fever without showing any albuminuria so long as they remain in bed, not infrequently develop, at any rate for a time, an orthostatic albuminuria on getting up. The interpretation remains for discussion. Four possibilities occur to me—there may be others of which I have not thought. The explanation may be one of coincidence, and all these patients may have been the subject of an orthostatic albuminuria previous to their attack of scarlet fever. Or, again, it may be that in any series of children getting up after a few weeks' illness in bed, a certain number will develop a temporary postural albuminuria—a sort of protest by the kidney against resuming work under harder conditions.

The only way of testing the truth of these suggestions is by examining a control series of children, roughly of the same age, convalescent from illnesses other than those due to specific infections. This I have attempted to do, but it has been difficult to obtain any material number of suitable cases, and for most of those that I have been able to examine I am indebted to my colleague, Dr. K. D. Wilkinson, who has found them for me at the Children's Hospital. I have now examined 35 cases and have found amongst them three instances of albuminuria of the orthostatic type. Two of these children had been in the fever hospital a few months previously with an attack of scarlet fever, and may, I think, fairly be excluded. The third had an active suppuration of the glands of the neck, and was therefore not really convalescent from her infection. If I accept this case as an example of coincidence and not the result of infection, I get a percentage of 3·1 positive results amongst these children, as compared with one of 26·5 amongst similar single examinations made in the convalescent scarlet fever cases. If I give the decision wholly, and, I think, wrongly against myself, and include the two children who had recently been discharged from the fever hospital, the percentage is 8·6 against 26·5. I do not think, therefore, that either of the above suggestions will account for my results. I suppose that a third explanation might lie in some obscure vaso-motor effect of the scarlatina. But such an explanation seems too vague for serious discussion, unless one starts out with the assumption that orthostatic albuminuria must necessarily be functional in nature, and it is this assumption that I am combating.

The only other explanation that I can see is one that falls in with the impression that has gradually grown up in my mind as the result of a long study of the orthostatic reaction—namely, that this type of albuminuria is in many cases the expression of a past renal infection of mild degree, and the suggestion would then be that in these post-scarlatinal postural albuminurias we are meeting with the very smallest degree of infection of the kidney. The conception of an infection so slight that it never translates itself into an albuminuria so long as the patients are kept in the horizontal position may seem far-fetched, but I can see no inherent impossibility in the idea. It postulates a damage to the kidney far short of anything so far described in the post-mortem room, but such degrees of damage must surely exist. Whatever the explanation, the facts are as I have stated them.

My results raise a further question—namely, whether it is not possible that cases of orthostatic albuminuria, with no known history of scarlet fever, may yet have had a scarlatinal origin. Dr. Harries tells me that in his opinion many cases of scarlatinal infection probably pass unrecognised as an "ordinary" sore-throat without rash. If that is so, the absence of a history of scarlet fever in genuine post-scarlatinal orthostatic cases would be easy to understand. We are accustomed to speak of the "adolescent type" of albuminuria, as though it were only to be expected that the adolescent kidney should at times leak albumin. I see no reason why the adolescent kidney should behave in this manner, but I do recognise that childhood and adolescence are the periods of special susceptibility to specific infections.

THE CONNEXION BETWEEN ORTHOSTATIC ALBUMINURIA AND PREVIOUS SCARLATINAL NEPHRITIS.

The connexion between orthostatic albuminuria and a past attack of scarlatinal nephritis has been previously suggested. Bass,[1] in 1912, gave an abstract of three papers dealing with the subject. Weiss-Eder [2] allowed 40 children with scarlet fever to kneel in a position of lordosis, with the result that 23 developed an albuminuria. The writer concludes that children convalescent from scarlet fever are not more disposed to nephritis than other children, and that such children, having nephritis, often show an orthostatic albuminuria, "which may be due to weak muscles." Nothman [3] found that 12 out of 13 cases of scarlet fever in which at an earlier date the lordotic experiment was positive, albumin appeared later in the urine, but that in those in which lordosis did not cause albuminuria, albumin never appeared spontaneously later on. He concludes that, just as nephritis may terminate in orthostatic albuminuria, so conversely an orthostatic albuminuria may be the first sign of nephritis. Schick[4] says that orthostatic albuminuria following scarlet fever has a good prognosis, and refers to Jehle, who examined 17 children in various stages of scarlet fever. In 12 there occurred a marked albuminuria in the position of lordosis, upright and prone, but none developed a nephritis. In each case I quote from Bass's abstract.

On the other hand, Hansborg,[5] of the Blegsdam Fever Hospital, Copenhagen, after a very careful study of the after-history of a large number of patients who had suffered from scarlatinal nephritis, rejects the idea that there is any special connexion between such nephritis and the subsequent development of orthostatic albuminuria. Among 226 children and young people, who had all had scarlatinal nephritis, he found 23 (10 per cent.) with orthostatic albuminuria, "which is even a lower figure than is generally quoted in examinations of arbitrarily chosen individuals of the same age" (I quote from a translation). I gather, therefore, that Hansborg looks upon these patients as likely to have been the subjects of an orthostatic albuminuria previous to their attack of scarlet fever. While holding that no single explanation hitherto propounded accounts alone for the condition, he supports the usual view that lordosis plays, at any rate, a chief part in its causation, though he admits that in only 6 of his 23 cases was a "pathological" lordosis to be discovered. But, he adds, "what can be considered as pathological here must be a matter of expert opinion."

While it is desirable to include a reference to these various opinions, it is to be noted that they largely deal with two matters with which my paper is not particularly concerned—namely, the occurrence of orthostatic albuminuria as the result of scarlatinal nephritis, and the effect of artificial lordosis in patients convalescent from scarlet fever. My point is that this type of albuminuria appears to develop on getting up in patients who have not shown any sign of nephritis during rest in bed, and for this it has not been necessary to assume any position of lordosis, which, after all, is only the extreme of the upright position. That lordosis is the essential cause of orthostatic albuminuria I do not believe. The evidence in its favour has never seemed to me very conclusive, and so many of my cases have shown an absence of material lordosis on X ray examination that I have long discarded it as an adequate explanation. Hansborg's cases, again, hardly seem to afford it much support. It may be, however, that there is a type of case into the causation of which it enters, as suggested at the end of my paper.

INFECTIONS OTHER THAN SCARLATINAL.

I come now to infections other than scarlatinal. I have already alluded to a case in which the condition was discovered immediately after an attack of diphtheria, and Dr. Chalmers, of the Little Bromwich Fever Hospital, very kindly collected for me one day the urines of 18 children convalescent from diphtheria; out of over 300 cases then in hospital these were the only ones in which no albumin had been discovered during the bed period. The children had all been up three hours, and the urines were therefore strictly comparable to those of the scarlet fever series. In these 18 urines I found one with a big albuminuria (560 units) in the upright specimen, the bed urine being albumin-free. One other urine showed a trace of albumin comparable to those discarded in the scarlet fever cases. These observations are again opposed to the explanation of the post-scarlatinal orthostatic albuminurias on the ground of coincidence. I know of a man, 49 years of age, with a postural albuminuria who dated his condition from an attack of syphilis occurring many years previously, and I have come across the case of a woman with an albuminuria of the same type who had had eclampsia two years ago. But both of these cases rest on a single examination only, and I cannot attach any great importance to them. Lastly, I have under observation two boys who were in my ward with a mild attack of acute nephritis of ordinary type, and who left hospital with a bed urine that was almost free from albumin and a big upright albuminuria. They were readmitted for 24 hours, three and two years respectively after their acute attack. In one the bed urine was nearly, but not quite, free from albumin; in the other no trace of albumin was found in the bed specimen. Both developed a large albuminuria immediately on getting up. While, therefore, I think that there is a special tendency for orthostatic albuminuria to develop, at any rate for a time, in patients getting up after an attack of scarlet fever, I am far from holding that the reaction is specific to that infection.

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[1] American Journal of Diseases of Children, 1912.
[2] Wiener med. Wochenschrift, 1909, No. 18.
[3] Arch. f. Kinderheilk., No. 49.
[4] Nothnagel's System, p. 141.
[5] Acta Medica Scandinavica, Feb. 12th, 1925.

Two further points have impressed me as possibly bearing on the question of the infective origin of orthostatic albuminuria. The first is the frequency with which cases come under notice on account of symptoms of ill-health. A certain number of my cases have been discovered on routine examination for some purpose or other, but the majority have come complaining of headache, fatigue, lassitude, and occasionally some little swelling of the face. With a few days' rest in bed these symptoms have disappeared or a slow improvement has taken place. Secondly, it not uncommonly happens that a case in which such symptoms are present on admission shows at first an exaggerated response to the upright position, which also diminishes with rest in bed. For example, a boy, aged 13, was admitted from the out-patient room complaining of general ill-health. On Nov. 29th, 1924, seven minutes' standing gave rise to an enormous albuminuria (650 units), whilst on Dec. 1st eight successive hourly specimens passed in bed were all entirely free from albumin. A fortnight later he was up with quite a moderate albuminuria—a maximum of 40 and 50 units, whilst standing now produced but a small response. But I would add that the variations in the response to the upright position in these cases are often so extraordinary that I must not attach too much importance to an apparent improvement such as is shown in this case. It may be that a few more observations would have upset the conclusion, and I have one case in mind in which a similar apparent improvement was suddenly reversed during the patient's stay in hospital.

RELATIVE PROPORTIONS OF GLOBULIN AND ALBUMIN.

I may briefly refer to the question of the preponderance of globulin over albumin in the urine, almost universally accepted as marking off the orthostatic cases from those of albuminuria of organic origin. My experience does not support the distinction. Certainly, if it holds, the organic nature of most of my cases of orthostatic albuminuria is definitely proved, but the relationship seems to me altogether too variable for use in diagnosis. I am far from denying that in the great majority of cases of nephritis albumin is enormously in excess of globulin, but I have come across a few cases of definite acute nephritis in children in which the reverse relationship has been present. On the other hand, of 11 apparently non-scarlatinal cases of orthostatic albuminuria in which I have kept notes on the point, in four globulin was in excess, and in the remaining seven a big excess of albumin was registered. In the scarlatinal cases examined at the fever hospital the same inconstancy of relation was noted. Two of the urines showed an undoubted excess of globulin, but in most of the others there was an equally undoubted preponderance of albumin. I did not, however, remember in every case to make the necessary observations. Each of the two positive diphtheritic cases showed an excess of globulin.

POSTURAL ALBUMINURIA A SYMPTOM.

I began by stating that I would regard postural albuminuria as a symptom only, and that the limitation of the term to the cases in which the bed urine is entirely free from albumin, convenient as it may be, tends to rob the symptom of much of its significance. The fact is that in many, and possibly all, forms of albuminuria the albumin output is susceptible to the influence of posture, though in very varying degrees in different cases. This is, I think, certainly true of the "parenchymatous" varieties of nephritis, acute and chronic, and several of the charts published in the *Quarterly Journal* show an albuminuria in mild acute nephritis which came down to a very small amount with the patient in bed, but was present in gross quantity in the upright position. I would therefore regard the complete cessation of albumin excretion in the horizontal position, characteristic of "orthostatic albuminuria," merely as the extreme example of the influence of posture. The following records are taken from the case of a man with chronic nephritis, a somewhat raised blood pressure, and numerous casts in the urine :—

	Albumin units.	
On going to bed	1100	
One hour after going to bed ..	120	(urine plentiful)
On getting up next morning ..	550	(urine concentrated)
Three hours after getting up ..	700	
Seven hours after getting up ..	1275	

The very big drop in albumin content an hour after going to bed is to be somewhat discounted by the fact that during the hour a plentiful urine was secreted, and, on the other hand, the relatively high morning reading is largely accounted for by the concentration of the urine of the rest of the night, due, of course, to the absence of fluid intake. But the influence of posture seems undeniable. Whether this influence is exerted in the chronic interstitial types of nephritis I am not so certain, but this is a matter which I have not carefully investigated.

Finally, cases are met with in which the albuminuria is almost, but not quite, "orthostatic" in nature, and these seem to me to form a possible connecting link between the completely orthostatic cases and cases of nephritis responsive to posture. Chart 2 (p. 684) gives an example of such a case. The patient, a boy aged 14, was in fairly good health when one day he fainted at school. Examination of the urine showed a large cloud of albumin, and he was put to bed, with the result that the albuminuria at once very nearly came to an end, but never quite ceased. When I saw him he had been in bed for some weeks. The blood pressure was a shade high for the age (130, systolic), but no casts were at any time found in the urine. As shown in the chart (one record out of many is alone included), he was intensely sensitive to the upright position, and seven minutes' standing always produced a big response. When he got up in the morning a very large albuminuria developed, but getting up in the afternoon gave a much smaller result—an approach to the "cyclical variation." Yet the bed urine invariably showed a slight albuminuria. It is difficult, I think, on this ground to separate the case from the more complete forms of postural albuminuria.

I do not claim that all cases of orthostatic albuminuria have the same or a similar origin. I believe that cases exist in which the symptom is due to mechanical embarrassment, possibly of the left renal vein, and in THE LANCET of Oct. 27th, 1923, I have myself recorded a case of unilateral œdema with an albuminuria probably coming from one kidney only, for which I suggested a purely mechanical explanation. Will it eventually be found that the cases of mechanical origin are those in which the albumin comes from one kidney only ? A certain number of cases of orthostatic albuminuria have been recorded in which catheterisation of the ureters has demonstrated that this was the case. I have some suspicion that these may prove to be the really "functional" cases, and that they own a totally different pathology from that of the cases dealt with in this paper. It may be that here lordosis is of importance. I may add that in five of my orthostatic cases I have tried by postural experiments—standing leaning first to one side and then to the other—to obtain evidence of the unilateral origin of the albuminuria, but in none has there been any material difference in the results.

SUMMARY AND CONCLUSIONS.

1. Many patients suffering from scarlet fever, who present no albuminuria during the period of rest in bed, develop an orthostatic albuminuria immediately after getting up. Some, at any rate, of these albuminurias persist for a considerable time, or even permanently.

2. Some cases of recognised scarlatinal nephritis are ultimately represented by an albuminuria of the orthostatic type.

3. Orthostatic albuminuria may follow other forms of specific infection, or even, though rarely, arise as the end-result of a mild acute nephritis of ordinary type.

4. The proportions of serum globulin and serum albumin are not constant in cases either of orthostatic or nephritic albuminuria, and do not enable a differential diagnosis to be made.

5. It is suggested that in many cases the orthostatic reaction is the result of slight renal damage. But cases probably exist in which the reaction is the result of mechanical causes. As a matter of speculation, it is suggested that in these cases the albumin comes from one kidney only.

6. Some response to posture occurs in most cases of nephritis, and possibly in all forms of albuminuria. All degrees of diminution of the output of albumin during rest in bed are met with, down to the complete cessation of the typical orthostatic cases.

7. Orthostatic albuminuria is probably of more frequent occurrence than is generally supposed. It may pass unrecognised owing to (1) the presence of a small quantity of albumin in the morning specimen of urine, due to the continuance of the upright albuminuria for half an hour or so after going to bed the night before, and the consequent contamination of the night's collection; (2) the cessation of albumin excretion during diuresis, even in the upright position; and (3) the cessation of albumin excretion in the sitting position. Extreme variations in the albumin output, with at times complete cessation, are therefore to be expected.

An Address
ON THE
CURES OF ÆSCULAPIUS.

Delivered to the Students of Westminster Hospital at the Opening of the Winter Session

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AN interesting chapter in the history of ancient medicine is offered by the cures of Æsculapius, or Asclepios, as the Greeks called him; and the subject is one upon which the students of medicine and archæology meet upon common ground. It has been much discussed whether the priests and descendants of Asclepios, the Asclepiadæ, were the depositories of a traditional skill in medicine and surgery; and in this connexion we must remember that Hippocrates himself was one of the Asclepiadæ, of Cos. The remains of an enormous plane tree in the market-place of the town are still shown to visitors as the place where he gave consultations to his patients The sacred precinct of Asclepios at Cos is situated in a delightful position on a terrace overlooking the sea, and there it is still possible to trace the remains not only of temples and altars, but also of the rows of cells which must have served as quarters for the invalids who came to consult the god or his attendants. Many such shrines of Asclepios existed upon various sites in ancient Greece, most of them in similar positions and surroundings. But two of these are of especial interest to us because we have actual records in literature and inscriptions of the method of consulting the god and the means by which cures were effected. These two are at Athens, where the precinct underneath the south side of the Acropolis referred to by Aristophanes may still be seen; and at Epidaurus, where there have been found not only the remains of the buildings, but two of the six great slabs mentioned by the traveller Pausanias as recording the cures effected by the god.

These two precincts of Asclepios were very similar in their arrangement, though that at Epidaurus was by far the more extensive. Both alike contained more than one temple and one great altar of sacrifice, as well as springs or sacred wells. But the most distinctive building in each was a large portico in two floors, partly closed and partly open to the air, and it was in this building, called in inscriptions the "abaton," that patients who came to be cured spent the night. How they spent it may be partly judged from the well-known description in the Plutus of Aristophanes; for though this description is of course burlesque, and may well appear lacking in reverence, it must have had sufficient resemblance to what actually took place to give point to the jests. In the play Plutus (Wealth) is represented as blind, and his friends resolve to take him to the shrine of Asclepios in Athens "to help him of his blindness." The slave Karion, who attends him during his visit, gives a full account of it, which may be summarised as follows:—

> "First we took him to the sacred spring and washed him; then we entered the precinct of the god, and after offering cakes and the other preliminary sacrifices, we duly put him to bed, among a number of others suffering from divers diseases, and we ourselves had shakedowns beside him. Then a minister of the god came in and put out the lights and bade us go to sleep, and keep silent if we heard any sound. So we all lay quiet. But I could not get to sleep, and I saw the priest going round the sacred tables and altars, picking up the figs and cakes and consecrating them into a bag. Then the god appeared, accompanied by his two attendant maidens, Iaso and Panacea. I hid my head under my cloak in fear, but I watched through the holes in it. And I saw the god going the round of the cases in due order, and an acolyte set beside him a stone pestle and mortar and a medicine chest. He first approached Neoclides, a blind man who excels those who can see at thieving, and he mixed and ground an ointment for him of garlic and fig-juice and squills with vinegar, and anointed his eyelids, turning them back to increase the smart. And the patient shrieked and cried out and tried to run away; but the god laughed and told him to sit still with his plaster. Then he came to Plutus and sat beside him, and first he felt his head, then he took a clean napkin and wiped his eyelids; and Panacea covered his head and face with a purple cloth. Then the god whistled, and two enormous snakes issued from the temple and gently crept under the cloth, and as it seemed to me, licked round his eyelids; and immediately Plutus stood up with his sight restored; and I clapped my hands for joy, and the god vanished with his snakes into the temple. And those who were lying beside Plutus congratulated him and remained awake all night till dawn."

Here we see many of the incidents that are repeated in the records of the cures at Epidaurus; but there is some confusion in both cases as to what actually took place and what was seen in a vision or a dream. But in the Plutus it seems distinctly to be suggested that the priest of Asclepios actually personated the god, a custom not at all unusual in Greek religion; and we know from other sources that large snakes were usually kept in the shrines of Asclepios, and were even in some cases regarded as the god himself.

ANCIENT GREEK RECORDS.

Before proceeding to enumerate the cures recorded at Epidaurus, a few words must be said as to the documents on which they are recorded. These are large slabs of marble headed "Cures of Apollo and Asclepios," discovered and first edited by M. Cavvadias, the Greek Inspector-General of Antiquities. Among medical authorities who have written about them, I would especially mention Sir Clifford Allbutt, Dr. Caton, and Dr. Alexander Cavvadias, son of their discoverer. The slabs were inscribed some time about 300 B.C., but they cannot be regarded as contemporary records of cures. They were evidently compiled at one time, and as we shall see, the source from which they were derived was partly the votive offerings with inscriptions that had been set up by the patients to testify their gratitude to the god, and partly the traditions of the temple; and the fact that one of the most curious cases is recorded by a Greek writer of nearly 200 years earlier in a slightly different form shows that this temple tradition did not deal only with recent cures. Such stories doubtless improved by repetition. Whether some of them had a basis of fact or not is a matter as to which I express no opinion. But, in a general way, many of them seem to have similar essential features, and to agree with the description given by Aristophanes. In nearly all cases the patient comes to the shrine of Asclepios, sleeps in the "abaton," has a vision or a dream, in which some action is taken by snakes or dogs, or else something similar happens to him while he is awake; and as a result he goes forth whole in the morning. Naturally, cases that are not so cured are not recorded, except in instances where the god showed his divine power by punishing an unworthy worshipper—just as in the Plutus happened to the thief Neoclides.

I now proceed to cite a selection from the cases, without any attempt at classification, in the order in which they are recorded on the slabs.

1. Cleo was with child for five years, and in the fifth she came to the god as suppliant and slept in the abaton; and immediately on leaving it and going outside the precinct, she gave birth to a male child, who directly he was born washed himself with water from the sacred spring and went about with his mother. And Cleo, being thus favoured, inscribed on her dedication: "It is not the size of the picture (or relief) that is wonderful but the divine power, since Cleo was pregnant and bore the burden in her womb for five years, until she slept in the sanctuary and the god made her whole."

This is important as evidence, for Cleo's inscription probably existed, and the rest of the tale may well have been made up to explain it. Possibly Cleo and the child were represented in the picture or relief, and a later generation might not understand the custom in early art of representing young babies as much too mature in form.

2. A man with all his fingers but one paralysed came as a suppliant to the god, and seeing the pictures in the precinct he disbelieved the cures and jeered at the inscriptions. He slept in the abaton and saw a vision. He seemed to be playing knucklebones in the precinct, and the god appeared and seized on his hand and stretched out his fingers. And when he went out he fancied he clenched his hand and stretched out his fingers one by one. And when they were all straightened the god asked him if he still disbelieved. He said no, and the god advised him to distrust his scepticism in future. And when day came, he went out whole.

3. Ambrosia of Athens, with one eye, having come as a suppliant to the god, went round and ridiculed some of the cures, saying it was improbable or impossible that the lame and the blind could be cured merely by seeing a dream. She slept in the abaton, and saw a vision. She thought the god stood by her and said he would cure her, but as his fee she must dedicate in the precinct a silver pig as a reminder of her stupidity. And then he cut open her diseased eye and poured some drug into it; and when day came she went out whole.

Here again we have an indication of the source of the story. The pig was doubtless on show, and the true explanation may be quite different.

4. A dumb boy came as a suppliant for speech, and made the preliminary sacrifice; then the acolyte of the god said, looking at the boy's father "Do you promise within a year, if he gets his wish, to pay the fee?" And the boy suddenly said "I promise." His father was astonished, and bade him repeat it; he did, and was cured from that moment.

This is a case which is, I believe, easily paralleled from modern experience. The next two are evidently edited with a purpose. I summarise them briefly:—

5. Pandaros had certain spots on his forehead. The god appeared to him in a dream, and put a bandage on them, bidding him on leaving to dedicate the bandage. When day came he took off the bandage and dedicated it in the temple, and his spots were gone. Echedorus, who suffered from the same complaint, came with a sum of money from Pandaros to dedicate to the god. He saw a vision in a dream. He thought the god asked him about this money, and he denied it, but promised to dedicate a picture if he were cured. The god put Pandaros' bandage on his forehead, and bade him when he went out to wash his face from the sacred spring, and look in the water. He did so, and saw that Pandaros' spots were added to his own previous ones.

6. This case is of a boy suffering from stone. He thought the god stood by him and said: "What will you give me if I cure you?" and he said "Ten knucklebones." The god smiled and said he would cure him; and when it was day he went out whole.

7. A man came to the god as a suppliant so blind in one eye that only the empty socket was left; some pointed out his folly in thinking he could come to see when there was no eye there. He slept and saw a vision; he thought the god mixed a salve and opened his eyelids and poured it in; and when day came he went out seeing with both eyes.

Here a comparatively common case seems to have been improved by the priests to increase the wonder of the cure. The next is a quaint story, not medical at all, but apparently intended to show the general powers of the god.

8. A porter fell down more than a mile from the precinct, and found some vases in his satchel were broken, including a cup his master used to drink from. He was distressed and sat down trying to piece together the fragments. A stranger passing by said, "That is no use, not even Asclepios could make that cup whole." He went on to the precinct, and when he opened his satchel he found the cup whole. He told the tale to his master, who dedicated the cup to the god.

I fear I can offer no explanation of this story, which shows we must admit some items to be pure invention. But doubtless the dedicated cup was on view to convince sceptics. Another case shows a human touch which reminds us of an incident in the Acts of the Apostles.

9. Æschines, when the patients were sleeping in the abaton, climbed a tree to look into it. He fell, and struck his eyes on some stakes. He was blinded, but he became a suppliant to the god, slept in the abaton and was made whole.

The next case looks like a simple example of surgery, possibly improved in detail, especially as to the quickness of recovery.

10. Euhippus carried a spear-head in his jaw six years. While he slept in the abaton the god took out the spear-head and placed it in his hands. And when day came he went out whole with the spear-head in his hands.

11. A man of Torone suffering from leeches slept in the abaton and saw a vision. He thought the god cut open his chest with a knife, took out the leeches and placed them in his hand, and sewed up his chest again. And when day came he went forth with the creatures in his hand and was made whole. He had swallowed them in a potion given him craftily by his step-mother.

12. Hermodikos was paralysed. When he slept in the abaton the god cured him and bade him when he went out to carry the biggest stone he could into the precinct, and he brought the stone that now lies in front of the abaton.

Here again the visible stone may have suggested the story.

13. Nikanor, a lame man, was seated; and a boy while he was awake stole his staff and ran away. He jumped up and pursued the boy, and from that time he was cured.

14. A man had his toe healed by a snake. Suffering greatly in his toe from a malignant wound, he was brought in the daytime by his attendants and sat down on a bench. He fell asleep, and a snake coming out of the abaton cured his toe with its tongue, and then went back into the abaton. When he awoke and found himself well he said he had seen a vision. He thought a beautiful youth applied some medicine to his toe.

This last reminds us of the cure of Plutus in Aristophanes; it is also interesting from the curious correlation of the vision in a dream with what actually happened; a confusion of the two may explain other cases. A belief in the healing power of the snake is of course common enough.

15. Alcetas, being blind, saw in a dream the god approach him and open his eyes with his fingers, and he saw the trees in the precinct. And when it was day he went forth whole.

This curiously reminds one of the blind man in the Bible, who saw "Men as trees walking."

16. Heræus had no hair on his head and a bushy beard; ashamed of being a laughing-stock to others he slept in the abaton and the god anointed his head with a preparation that made his hair grow.

It is to be noted it is not stated in this case that the cure was instantaneous.

17. Thyson, a blind boy, was licked on the eyes while awake by one of the dogs in the precinct, and went forth whole.

Here there is no vision or dream, as in the case of the man cured by a snake. Dogs also are commonly reputed to have this healing power, possibly because they lick their own wounds. Sacred dogs and snakes were evidently kept in the precinct for the purpose.

I have given a practically complete version of this inscription because I think the form and details of the cures quoted are of importance in forming any just estimate of the value of the record. The other slab is not so well preserved, and the records of many of the cases are only fragmentary. I do not therefore propose to reproduce them in detail; in general character they are similar to those on the first slab. But two or three of the cases are of a special interest, and I add them in summary form.

18. The mother of a girl at Sparta consulted the god on behalf of her dropsical daughter. She dreamt that the god cut off her daughter's head and hung her body neck down; when much liquid ran out, he sewed the head on again. She returned to Sparta and found her daughter, who had had the same dream, restored to health.

This kind of vicarious incubation is unusual.

19. A somewhat similar case is that of Aristagora who had a worm in her intestines. She slept in the shrine of Asclepios at Troezen, and had a dream. She thought the sons of the god, who was himself away at Epidaurus, cut off her head, and being unable to replace it, sent for the god. Meanwhile day came, and the priest saw the head separate from the body. The following night she had again a dream that the god came and replaced her head, and then cut open her abdomen, removed the worm, and sewed her up again.

Here there is obvious confusion between dream and reality, and the priest, seeing head and body apart, seems to be a corroborative detail. But the chief interest in this case lies in the fact that the same story, with some variation, is told by a writer some two centuries earlier than the inscriptions, Hippys of Rhegium. According to his version, the lady came to the precinct of Asclepios at Epidaurus, not the one at Troezen; the temple attendants attempted the cure, cut off her head, removed a gigantic worm, and then could not put the head on again. The god came and blamed them for their presumption, and put things right. It is evident that the priests would not tolerate a record of such blundering in their own temple. One or two other cases have features of interest.

20. A man having what is described as a wound or sore in his belly was lashed down when he resisted operation. Asclepios cut open his abdomen, removed the sore, and sewed him up again. He was cured, and the floor in the abaton was covered with blood.

21. A man suffering from headaches dreamt that the god gave him some training for the pancration; he was cured, and soon after won the pancration at the Nemean games.

22. Finally, a lady suffering from indigestion dreamt that the god gave her some medicine in a cup to drink which made her sick, so as to fill her basin. And when day came there was her basin full of vomit, and she was cured.

In this last case the dream seems to correspond with the fact.

These inscriptions have been much discussed, and some think them a mere tissue of superstitions and absurdities. But so high an authority as the late Sir Clifford Allbutt says that—

> "by pomp, splendour, and ancient enchantments the senses were captured, and the springs of nervous energy unsealed. . . . It is supposed that mesmerism was a potent means in the hands of the priesthood; that patients were subjected to hypnotic suggestion we know with some fulness."

I am not, of course, competent to criticise the evidence from a medical point of view, but I have studied both the records and the psychology of the ancient Greeks, and I think that, allowing for some improvement in editing on the part of the priests, above all of some confusion of dreams and facts, many of the cases above may be attributed either to medical or surgical skill, and that among them are also cases of faith-healing or of sudden impulse or suggestion due to nervous excitement. However this may be, the priests of Asclepios certainly changed their practices in later times, and seem to have taken to running sanatoria and no longer depending on instantaneous cures, for which faith no longer was forthcoming. A good example of this later treatment is offered by the case of M. Julius Apelles, in the second century A.D., who suffered from chronic dyspepsia, and was ordered by the god to take a kind of rest cure, with prescribed diet and regular exercise. Such prescriptions are not uncommon, and show that the various shrines of Asclepios had become centres of medical and even surgical therapeutics.

INCUBATION SHRINES.

Asclepios was not the only god or hero in whose shrines the custom of incubation was prevalent. In the precinct of Amphiaraus at Oropus it was customary for invalids who consulted what was practically a dream oracle to cast gold and silver coins into the sacred spring. They sacrificed a ram, and slept on its skin in the temple or a portico attached to it; they then related their dreams to the priests, who gave expert interpretations. We have unfortunately no information as to what these were like, but they may have given opportunity for medical advice. The shrine was a popular one, and therefore must have met with some success.

In another shrine, that of Trophonius at Lebadea, there were elaborate arrangements which seem to imply some mechanical devices and trickery. The traveller Pausanias, who himself went through the process, gives an elaborate description of it. After some days of preparation, with sacrifices, special diet, and cold baths, on the night chosen the patient was bathed in the river, led to the two springs of Forgetfulness and Memory, of which he had to drink, and then he descended by a ladder into an artificially constructed hole in the ground. Here he lay down with his feet up to the knees in a hole at the side. His whole body was immediately drawn through the hole by an irresistible force; the oracular response was either by sight or hearing, and he returned again through the hole feet first. The priests took him, placed him on the seat of Memory, and interrogated him as to what he had seen or heard, and then returned him to his friends, in a state of terror and unconscious of his surroundings. But he soon recovered and laughter returned to him. The priests, here also, gave expert interpretations of the sounds or visions. The oracle was mostly, though not exclusively, consulted by invalids, to whom it must have been a sore trial, though Pausanias declares none of them were ever killed by it, except a soldier who went in hope of loot, and whose body was found some distance away.

Shrines for incubation are by no means extinct in Greek lands at the present day. In conclusion, I should like to describe one of those which I have myself more than once visited. The great church and precinct of the Panagia (Our Lady of the Annunciation) in the island of Tenos is visited at her annual festival by crowds of people from all Greek lands, bringing with them many men and women suffering from all sorts of diseases, especially the blind, the lame, and the paralysed. These are laid, in their beds, on the floor of the church and of the crypt beneath it, which they fill, so that there is barely room to pass along between them. The sight must be very like the abaton in the precinct of Asclepios in old times. The patients are placed here on the eve of the Annunciation, and so spend the night. Every year some two or three so-called miraculous cures take place; one year when I was there a woman who had crawled painfully up to the church with paralysed limbs threw away her crutches and danced back to the harbour amid the rejoicings and congratulations of her friends. I do not think that fraud or collusion plays any considerable part in such cases. It is to be remembered that only two or three out of hundreds are so cured; and those who are not so forget their own state in rejoicing at the healing of another, just as the rest of the patients surrounded Plutus in the play. The many are forgotten, and the few are remembered and recorded. The case of Lourdes is, of course, similar, and I believe nobody now doubts the instances of faith-healing that have occurred there, especially in nervous or hysterical cases. A certain number of such cases, together with some examples of successful surgery or medical treatment, may well form the nucleus around which the sometimes fanciful records of the cures of Asclepios have accumulated.

An Address

ON

THE HUMAN TOUCH IN PROFESSIONAL LIFE.

Delivered to the Students of Guy's Hospital at the Opening of the Winter Session

By MAJOR J. H. BEITH, C.B.E., M.C.
"IAN HAY."

GENTLEMEN,—First of all let me say how greatly honoured I am by your invitation to me to address you this afternoon. My pleasure, however, is somewhat diluted by the fact that I am not in any way qualified to address a medical audience—except to this extent, perhaps, that once, long ago at Cambridge, I took a course of chemistry and physics, as a sort of antidote to a prolonged dose of the classics; and also, because during those far-off undergraduate days my circle of acquaintance lay very largely among gentlemen who kept a human skull on the mantelpiece and a skeleton, or portions thereof, in the cupboard, and whose soaring spirits only drooped—and that for a moment—when their thoughts turned towards a mysterious and awful ordeal which lay waiting for them about the end of their third year, called the Second Part of the Second M.B. Moreover, it was in that noble company that I first made the acquaintance of my friend—your friend—our friend—Dr. H. C. Cameron, through whose offices, good or bad, I find myself here this afternoon.

We were a band of brothers in those days, with all things in common. Some of us were studying classics, some mathematics, some theology, some medicine, and some, of course, were merely hoping to be excused the General, or be allowed an ægrotat in botany; but just as you can distinguish the voice of the saxophone above all the other instruments in a jazz band, so medical interests and medical shop overtopped everything else. If one of our medical friends performed the feat of "passing his bones," we celebrated the event together, theological students and all. I became well versed in the airy chatter and gossip of what were called in those days, and I suppose are still called, the meat shops; and I shall never forget the scene of enthusiasm which occurred one evening, the first evening of term, when an excited second year man—one of those busy persons who are always full of what we will call, not inappropriately, inside stuff—burst into my room, where I was entertaining a few medical friends, seized Cameron by the hand, shook it warmly, and said to him: "Congratulations, old man! You've got a head and neck!" It is upon such slender foundations as these that I am endeavouring to build up sufficient courage to address you this afternoon.

PERSONALITY AND TRAINING.

I have labelled my discourse the Human Touch in Professional Life, by which I mean character, or personality, as compared with technical knowledge and ability. Of course, the one must not be regarded as a substitute for the other. No force of character, no attractiveness of personality in the world, can ever compensate for ignorance of one's job—in your profession of all professions. Personality is a useful, and sometimes invaluable, appendage to a man's professional equipment, but it can never constitute an equipment in itself.

I emphasise this rather patent fact because there is a general and dangerous tendency in the world to-day to exploit this personality stunt to an absurd degree, to the neglect and detriment of real training and thorough knowledge. In other words, we live in an age of advertisement—in an age, that is, where people are tending more and more to expend their energies, not upon putting quality into their goods, but upon thinking out ingenious and profitable methods of disposing of those goods. The theory appears to be that if you advertise them long enough and loud enough it does not matter whether your goods are good or not. So the art of advertising has now been elevated to one of the high and solemn mysteries. There are actually colleges and institutions in the world to-day at which you can receive instruction, and win diplomas, in this art—the art of ascribing to an article virtues which it does not possess so persistently and so convincingly that ultimately you succeed in unloading it upon someone who does not want it. I speak with some feeling in the matter, because I myself am the possessor of, I think, 28 volumes, in half-morocco, of an obsolete encyclopædia which I was recently dragooned into buying, on the instalment system, by those exact methods.

From this you will realise that the whole aim of modern advertising, whether you are selling encyclopædias or merely trying to get elected to Parliament, is to delude your hearers into confusing promise with performance; and the odd part about it is that the advertiser often ends by deluding himself. For instance, upon the premises of our most progressive railway companies you may possibly have observed pictorial posters depicting an express train, in three colours, dashing along a highly burnished permanent way at 70 miles an hour, supported by alliterative captions on the subject of Sunny Southern Sunshine Specials, or something of that kind. The railway companies in question obviously regard that poster as a perfectly adequate substitute for an efficient train service; and what is more, they can hypnotise some of their passengers into agreeing with them. We succumb to political wiles in the same fashion. One politician gets up and promises us that he will take a shilling off the income-tax. A second gets up and promises to make it two shillings; and so fascinated are we by the glamour of advertisement that we promptly vote for the second candidate, although we know perfectly well that neither of them has the slightest intention of taking anything off the income-tax at all.

So you see, if you want to get on in this world quickly you must advertise. And if you want to advertise successfully, the best way is to get into personal contact with your victim; and, of course, in personal contact it is your bearing and your manner which will count. Therefore, to be a successful man of business nowadays you must have personal magnetism or charm; and if you have not got charm you must acquire it—in other words, you must apply to persons who can sell it to you. And there are such persons. The other day I came across a most invaluable book, obviously of American origin, in which was set forth the whole art of making yourself attractive, and even lovable, to people to whom you want to sell something. In anticipation of my next interview with my publisher, somewhat overdue, I studied this little volume very carefully.

Personal Questions.

It started with a sort of examination paper, in which you were asked 40 questions about yourself, which you had to answer honestly and to the best of your ability, and then allot yourself marks for each. Here are a few. I pass them on to you, because I feel that it is not fair to keep such pearls to myself:—

1. Do you wear colours that are best suited to your type? If so, credit yourself with five marks.
2. Do you start to work every morning with clean finger-nails, clean boots, shaved, trousers pressed, suit and linen spotless? If so, credit yourself with five marks.
3. Can you walk across a room full of guests, speak to the hostess, and conduct yourself without awkwardness or embarrassment? If so, credit yourself with five marks.
4. Do you gesture from your shoulders instead of from your elbows? (See p. 135.)

Being entirely baffled by this question, I turned to p. 135, and discovered that to make gestures with your elbows is wrong, because if you do, "you do not include all the persons in a room." I had never known that. Anyhow, not knowing which part of my anatomy I do gesture with, I gave myself no marks and passed on.

5. Do you avoid using cheap, boastful expressions ? Are you making some effort to improve your vocabulary ? Do you own a good dictionary ? If so, credit yourself with five marks.

I did not quite grasp the connexion between these questions, but I gave myself three marks. After all, I do own a dictionary.

6. Do you give a certain amount of thought in advance to your conversation with people you know you are to meet, so that you will be sure to talk of things that are of interest to them ? (See Chapter 7.)

I looked up Chapter 7. It said :—

Here are some general questions with which to open a business conversation. Others, equally interesting, will occur to you.

(*a*) How far back can you remember ?

(*b*) Do you fear death ?

(*c*) How is your wireless working ?

(*d*) How far do you consider you are indebted to your parents for all they have done for you ?

(*e*) Do you think doctors should charge their patients in proportion to their incomes, or should they have a standard fee for their services ?

I did not think that any of these topics would really interest my publisher, so I abandoned that chapter, and passed on to the seventh question.

7. Do you avoid making a public display of your affection for your wife or sweetheart ?

I unhesitatingly credited myself with five more marks, and closed the book. There were 33 more questions, all as good as that, but I need not trouble you with further extracts. However, I think I have made it sufficiently clear to you what a complicated job it is in these days to fit yourself to be a really successful and lovable salesman.

THE ART OF HANDLING PATIENTS.

Still, at the back of all this rather fantastic stuff there is a real strain of common sense. Of course, it is of importance—enormous importance—to be able, on the top of all your intrinsic and technical merits, to suit yourself to your company and employ your natural gifts to their best advantage. And in the cultivation of the healing art—your art—I think you will admit that the human touch is of incalculable importance. I suppose it is true to say that as much healing is produced by suggestion as by physic, and that many a patient gets well simply because he believes in his doctor. We need not go all the way with Samuel Butler, who tells a story somewhere of a man who swallowed a doctor's prescription in the belief that it was actual medicine, and was immediately cured of a dangerous illness, but the human touch does count, all the time. A doctor is above all things a propagandist. To a certain extent he is always playing a part—backing up the resources of science by the arts of the skilled advocate ; mixing the powder and the jam in such proportion that the powder escapes notice yet achieves its purpose ; doing everything, in fact, that is morally justifiable to create, maintain, and increase the confidence of the patient in his own chances of speedy recovery.

This brings us to the real heart of our subject—the consideration of the gentle art of handling patients. I can say something about this, because, although I have never been a doctor, I have occasionally been a patient ; and I agree with you, right away, that patients are a most unreasonable tribe of people. You can divide them into many classes, but three will suffice here :—

1. People who are really ill. We need say no more about these, because they give little or no trouble.

2. Patients who are rather ill, but do not believe in doctors, and tell you so quite frankly. You know the man who says to his doctor :—

“ I only called you in because my wife insisted on it. I know as well as you do that the whole medical business is mere mumbo-jumbo, mere quackery ; so don't start taking my blood pressure or doing any conjuring tricks with thermometers and stop-watches. I know how my inside works much better than you do, because it's my inside and not yours. You can leave me some medicine if you like, just to save your face ; but I warn you I shall throw it out of the window.”

That's the bluff, honest, hearty type of patient, the type that has made the name of Englishmen respected all over the world.

Well, the simplest and most profitable way to handle this individual is to employ the soft answer. You say :—

“ My dear fellow, I agree with every word you utter. Of course, you are quite right ; all medicine is nine parts faith and one part colouring matter. You and I both know that, so there is not the slightest use in my prescribing for you in the ordinary way. If I may say so, it is a treat to encounter a patient with whom a doctor can be absolutely frank—a patient who doesn't want things wrapped up in meaningless phrases. You, as of course you probably know without my telling you, are suffering from ——.”

Here you give him the name of his disease in Latin —two longish words, with a false concord thrown in. You add a few scientific terms about reflexes and secretions, and so on, and wind up, if possible, with an incorrect chemical formula. After that, he will simply eat out of your hand. Technical terms are the medicine he wants. Many a man will positively enjoy a tennis elbow if he is allowed, when he talks about it at the club, to refer to it as “ my synovitis.”

Then we come to a third class of patient—the patient who thinks he is going to die forthwith, if not sooner, and has to be cheered up. In that connexion I cannot resist calling, or recalling, to your notice one of W. W. Jacobs's stories about that immortal trio Sam, Peter Russet, and Ginger Dick. I want to read you an extract. Sam, you may remember, was taken ill.

“ And,” continues the Night Watchman, who tells the story, “ like most 'ealthy men who get a little something the matter with 'em, 'e made sure 'e was dying. 'E sent Peter out for a doctor, and in about 'arf an hour Peter came back with a sandy-'aired young man with red eyelids and a black bag. ‘ Am I dying, sir ? ’ ses Sam, after the doctor had listened to his lungs and 'is 'art, and prodded 'im all over. ‘ We're all dying,’ ses the doctor, ‘ only some of us 'll go sooner than others.’ Peter and Ginger Dick took turns to be with Sam that morning, but in the arternoon the landlady's mother, an old lady who was almost as fat as Sam 'imself, came up to look arter 'im a bit. She sat on a chair by the side of 'is bed and tried to amuse 'im by telling 'im of all the death-beds she'd been at, and partikler of one man, the living image of Sam, who passed away in his sleep. It was past 10 o'clock when Peter and Ginger came 'ome, but they found poor Sam still awake and sitting up in bed propping 'is eyes open with 'is finger.”

Well, that's a good example of how not to do it. What a patient of that kind wants is to be reassured ; and that is where technical knowledge will not avail you so much as a cheerful presence and a confident manner. And here, speaking from my experience as a patient, may I drop a hint to future G.P.'s ? Humanity fears one thing above all others—the unknown. What frightens a patient most of all is to have nothing definitely wrong with him. Once a definite cause has been assigned to his ailment, once you have hung a label on it marked in plain figures, and given him something physical to hold on to, he will endure almost anything. So if you can, be explicit with him upon this point, even though you may not have the slightest idea what is the matter with him. Tell him something—anything that will keep his imagination from soaring into the regions of unhealthy speculation. Anything will do : a man is never frightened of a thing he knows all about, or thinks he does. It is a good plan sometimes to be symbolic—to illustrate the patient's condition, or supposed condition, by some mechanical analogy. You can refer to trouble in his engine-room, or explain that his dynamo requires tuning up, or his accumulators recharging, or that an overstrained spring must be relaxed. Something tangible and concrete like that—something he can bite on. Tell him that he has a Rolls-Royce body, but that there is water in the carburettor, or the petrol pressure is faulty. That will cheer him up much more than to tell him baldly that his malady is functional and not organic. It is a strange thing, the amount of solid comfort a nervous person can derive from having his interior compared to that of a motor-car; but the comfort is there—especially if you tell him he's a Rolls-Royce.

THE SENSE OF RESPONSIBILITY.

Now, gentlemen, you must not think, because I am referring lightly at times to your responsibilities, that I do not realise very thoroughly how great and solemn those responsibilities will be. Yours, I suppose, is, with the possible exception of the teaching profession, the most responsible profession in the world. And for that reason you may be proud and thankful that you spring from the race you do, because our race possesses in a peculiar degree a quality which is indispensable to men of your calling—initiative; ability to act without running to someone else for instructions; readiness to assume responsibility as a mere matter of course. An Englishman possesses an extraordinary capacity for reliable work in a subordinate position, or perhaps I should say capacity to perform a task efficiently and conscientiously without any sort of supervision from higher up. Who are the men who keep the wheels of our Empire running? You may safely say they are not the people at the top. As a nation, we have seldom been well led or wisely directed in all our history. The main strength of our country lies, and always has lain, in our men-at-arms—our Other Ranks, as they call them in the army—whether those ranks be military or industrial, or administrative, or professional. Most of our successes, whether in war or peace, have been what we are proud to call soldiers' battles—the victories of the average man—the average Englishman. He is not brilliant, he is not spectacular, but you can rely on him. In South America they have a phrase, *Palabra Inglesa*—"on the word of an Englishman," and it means, with them, "Honour Bright!" That is the most splendid compliment ever paid by one nation to another, and it is addressed in the main to the man whom we are considering now. We ourselves depend on him to such an extent that we pay him the compliment of taking him as a matter of course—and we are seldom disappointed. The Civil servant, the platoon commander, the head clerk, the junior form master, the slum curate, the country doctor—these are they that propel the ship of State. Up above upon the quarter-deck, looking portentously wise and occasionally quarrelling for the possession of the helm, you may behold their superiors; but these friends of ours remain below the water-line—unheeded, uncredited, and to a large extent unsupervised, and that is the main point—and see to it that the wheels go round. They grumble and grouse, of course, and tell one another they are fed up—and usually they are—but they carry on, because initiative and responsibility are in their blood. They expect no thanks, and they are not disappointed. But the ship goes forward, and that is all they care about. Win or lose, sink or swim, in good times or in bad, that is what counts—the ship, the cause, the job, and not themselves.

Our Empire, like most of our institutions, came into existence in the most casual fashion. It was never acquired officially; it was never built up upon the ambitions or intrigues of kings and ministers. It was founded upon the efforts and sacrifices of common men—men whose very names have perished—who went out from our little island because the spirit of adventure bade them go out and better themselves, and who planted the seeds of enterprise and justice all over the world, to the complete effacement of themselves, and too often at the sacrifice of their own lives—men, in other words, who set the cause above the prize. It was only when through their efforts our interests in this quarter of the globe, or that, grew too unwieldy or important for private control that the British Government, with a deep sigh and an anxious eye on the taxpayer at home, reached out a reluctant hand and took official command.

To-day, all over the world wherever our flag flies, men you never heard of, and never will hear of, are shouldering responsibilities, making rapid decisions, improvising working expedients, getting the wheels round somehow—not for any special honour or glory that is going to accrue to them, but because it is their job, and it is up to them and them alone to do it. So they do it, by sheer force of character, personality, and the human touch. These are the things which bring them through. And foremost among those men I salute the members of your profession, because that profession bears as heavy and as proud a share of those burdens and those responsibilities as any.

THE FUTURE OF THE MEDICAL STUDENT.

Now I think I have said all I intended to say—or something like it—and it only remains for me to wish you good luck in the career that you have chosen. Many branches of that career are open to you, and no one of you knows exactly what the future holds in store for him. It may ultimately land you in Harley-street or at the head of some great hospital. It may make you a student of research, devoting your life to the study of a single disease or the isolation of a single germ. It may send you overseas as a medical soldier or a sailor, or as a member of some scientific expedition to a far tropical country. Or it may simply plant you down as a general practitioner in a manufacturing town, working 18 hours out of 24, with a large, troublesome, and for the most part unremunerative family of patients running to you all day long to have their hurts healed or their fears allayed. But wherever fate may place you, however high or low; however hard you may have to work; whatever difficulties and discouragements you may encounter—and you may be sure they will come—nothing can take away from you the sheer greatness of your chosen profession. Yours is one of the few essential trades on earth; it goes right down to the roots of human existence. You are the standing army and navy of humanity. Your life is one long campaign on behalf of other people, against ignorance, and dirt, and cruelty, and disease. We can never do without you. You bring us into the world; you attend us upon our voyage through life; at any moment we may call upon you to dry-dock us, or more frequently assist us to carry out that most ticklish of undertakings, the execution of repairs while under steam. And when the time comes for us to pass beyond the horizon of human life, we call upon you again, for the last time, to assuage our sufferings and soften the pangs of death.

You see, we depend upon you in all things; and we trust you implicitly. To your hands we commit the innocence of our children and the honour of our womanhood; and it is the special glory of your profession that these commitments are made without question, as the merest matter of course, because we know that they will never be abused. For generations that tradition has been passed down, and it is to that tradition and heritage that you are now about to succeed. Here in Guy's Hospital you have a great history and a wonderful record. You were at work 200 years ago, and to-day your activities are greater than ever. Only a few years ago Guy's men were doing their duty on every fighting front in the war, and Guy's nurses too. I well remember at the Battle of Loos, almost ten years ago to-day, a specially constructed communication trench for stretcher-cases only, which was called "Guy's Avenue." And you have a proud reputation here for team-work and esprit de corps, whether in your work or in your play, as those who have encountered the Guy's Football Fifteen have cause to remember. Altogether, a great tradition and a great heritage. So I say, go on and prosper!

And one last reminder on the matter of my text. You will note that I have heroically refrained throughout this rambling discourse from urging you to cultivate what is known as an "agreeable bedside manner." I still refrain, but let me remind you once more that a few words of cheery common sense and unprofessional informality will often do more for the average patient than the whole British Pharmacopœia. So, steep yourselves as deeply as you like in the knowledge and lore of your craft, but do not forget the Human Touch!

An Address
ON
THE STUDENT-HABIT.

Delivered at the Opening of the Winter Session at King's College Hospital

By Sir ARTHUR KEITH, M.D. Aberd.,
HUNTERIAN PROFESSOR, ROYAL COLL. OF SURGEONS OF ENGLAND.

Of all the men it has been my fortune to meet in the flesh, Clifford Allbutt, Regius Professor of Medicine in the University of Cambridge, came nearest to my ideal of the real student and the perfect gentleman. He died in February of the present year, having reached his eighty-ninth year. For 70 of those years he was a professed student, and yet at the end of his term he carried his load of learning with ease and comfort as if it were a garment which had become part of him. He never suffered, so far as one can learn, from that fell disease which so often wrecks the lives of budding students, mental dyspepsia. For his brain managed its affairs as a good woman runs her household; every article admitted to his mind had first to be sampled; when admitted the right place was found for it; every article admitted had to add to the efficiency and comfort of his mental household; every room had to be furnished and used. And yet at the end of a lifetime of toil—a toil which had been his constant pleasure—he still continued to make additions and alterations to his mental furniture. His mental household, like that of a thoughtful, happy, generous housewife, prospered in that which it gave away. The giving away kept the rooms of his mind sweet and living.

I have cited the example of Clifford Allbutt in order that I may make clear to you what I mean by the "student-habit." He could sit down by the hour and apply himself with a sense of pleasure to gleaning knowledge from the written or printed page, drinking in and assimilating facts observed or explanations given by men who had toiled in years long gone by. He applied himself with equal ease to the writings of his contemporaries, men who were still toiling in their laboratories or in their wards. The men or women who can acquit themselves thus have acquired the student-habit. Of all the struggles men undertake, that which ends in making the brain the willing slave of study is the most arduous. Of all mental habits it is the one most difficult to come by, and the one which is most easily lost.

Many men who are masters of research, who force secrets from Nature by experiment, who prefer to glean their knowledge at first hand and are, I admit, the rarest and highest form of scholars, often despise the habit I wish to extol—the student-habit. There have been, and there are, successful medical men who turn aside from books, who leave their medical papers unopened in their wrappers, who prefer to be guided in thought and action by what their fingers have felt and their eyes seen. If by neglecting the student-habit they gain something, they also lose much, and it would go ill with their harvest of knowledge if their successors treated them in the same selfish way as they have done their predecessors. I do not claim for my ideal student, Clifford Allbutt, that he was a pioneer who opened up great new fields of knowledge, but he attains to my ideal because he checked what he saw and what he suspected against the observations and the theories of the great minds which have paved the highways of medicine. Nature had endowed him richly, but he could never have done what he did nor been what he was unless he had acquired the student-habit. I speak as an old student of ordinary ability, to young students born into the same happy estate, and I say that the acquisition of the student-habit is one of the most valuable assets that a man or woman can carry into any line of life.

At what age Clifford Allbutt acquired the student-habit I do not know, but I can assure you that if it came to him by the age of 20 it had come in due time, for with the best of students the twentieth year is in sight before the real purposes of life dawn on their minds. Nor do I know of the struggles which he went through before the habit of study became his second nature—such biographical details are usually overlooked—but I am certain that, even in his case, there had been a struggle, for of all human habits that of the student is the most unnatural and the most forced; it is a hot-house plant which can thrive only when enclosed in the glass houses of the highest civilisations.

Our Illiterate Forbears.

The student-habit is comparatively new amongst the peoples of North-Western Europe. A thousand years ago our British forbears, although rich in the knowledge of life, were in the full meaning of the term illiterate; for many thousands of years their forefathers had been hunters, fishers, crofters, and livers in the open air, drinking in traditional knowledge by word of mouth. The peoples of Western Europe produce the highest form of students the world now has, and yet the student-habit is for them a recent importation. It was otherwise in the East; 6000 years ago, perhaps 8000 years ago, young men in Babylonia and Egypt were acquiring the student-habit; it began as soon as the human mind conceived that knowledge could be inscribed on stone or brick; with that discovery was instituted the student-habit. If there is aught of truth in the inheritance of acquired faculties it is from the peoples of the East we should get our finest scholars; they come of long lines of descent in which study has been endemic for countless generations. It is true that amongst the peoples of the East, from Egypt to China, we do often find those who have a marvellous facility to memorise the written or printed page and yet amongst them the Clifford Allbutt type of scholar is rare—almost unknown—the scholar who assimilates what he reads and makes his learning a part of his manhood. Learning thrives in Western Europe just because it has fallen on a strong and virgin soil, one which has not been wasted by the exhausting crops of a long-continued literate civilisation. We have still in us the virility and the energy which are inherent in men and women bred for life in the open air.

It is because you and I have the aptitudes and instincts of our primitive forefathers so strong within us that we find it needs an effort—an internal struggle—to settle ourselves to our books of an evening. Our difficulties are even greater when the sun shines and a longing for the open country stirs our blood; it is then that we have to struggle with the original Adam which is present to a greater or lesser degree in the hearts of all of us. English teachers, beyond those of any other country, have recognised the needs of those primitive faculties which well up in the breasts of scholars young and old; we encourage play and sports of all kinds in our schools and universities in order that the inheritance which has come down to us from savage ancestors may find vent in exercise. Golf is one means of allaying the beast; walking another. It is so difficult for the modern student to weld the needs of our present-day life to his inborn predilections. There are cards, billiards, and theatres ever ready to tempt the unwary student from his stool. For if study is to prosper, is to become a second nature, we have to make sacrifices; dances, festivities, and pleasant company have to be kept within the bounds of moderation. To dance, to sing or play, to feast, to gossip are the outlets of the natural man; ever since our distant ancestors emerged from the jungle these instinctive outlets for enjoyment have been clung to and cultivated; they have come down to us in an undiminished vigour. Before the student-habit can be acquired they have to be—not vanquished or eliminated—but disciplined. That is why it is so difficult to become a real student.

Reaction of Brain and Stomach.

You will not be a student for many years before the most natural of all human appetites begins to give you concern. Amongst the prerogatives of life we count the enjoyment of food; we expect to eat with relish and to enjoy the results of repletion. We are not quite certain what our brain cells live on, but we do know that they need very little to do the heaviest work we throw on them; the energy in an ounce of sugar would be enough, I suspect, to produce any of Shakespeare's plays, if it found its way to a brain gifted as his was. Everyone of us has been given the appetite, not of the brain-worker, but of the muscle-user. The professional student, in his earlier years, expects to satisfy his appetite just as fully as if he were using his muscles all day in the open air, and sooner or later his stomach has to pay the price of his acquired habit of study. Carlyle, Darwin, Huxley, and Herbert Spencer suffered from this "student's disease"; it is true all were moderate eaters and yet their stomachs were in a state of continual upset and rebellion, yet they all lived to a ripe age. Modern physiology has given the stomach a secondary place in the hierarchy of bodily organs. And yet somehow, as students know to their cost, sooner or later, brain and stomach react furiously upon each other. It is true that we do come across eminent students who have the physique, complexion, and appetite of yeomen. They are exceptions and should count themselves fortunate. Most of us who take to habitual study have to pay the price and the more we give our stomachs to do the higher is the price we have to pay. To become a real student you have to be prepared to make sacrifices. For your encouragement I would say this, that I know of no student who would exchange a regulated brain for the healthy appetite of the mental sluggard.

Many of us, perhaps most of us, have grown up under the belief that it is a natural thing for young men and women to give themselves to study. It is only when we approach the problem of the acquisition of the student-habit from the long-range historical point of view that we see how foreign the habit is to our nature and how recently the need for it has arisen. Some can claim that their family has produced scholars, learned men and women, for many generations; such are the exception rather than the rule. The majority of eminent scholars have no scholarly lineage. They come from highland glens, Welsh hillsides, English county villages, the first of their kind, so far as they can tell, who ever devoted their lives to the cause of learning. There must be throughout the length and breadth of our land immense and virgin fields of untapped scholarly talent. I am not speaking now of those rarely gifted minds which can imagine things which are new and true, which know the way to make Nature yield up her deepest secrets or discover how to harness new forms of energy for man's benefit, but of the rank and file which make up the learned army of a country. To join that army every recruit must learn the student step—the habit of study. It may at first sight seem surprising that there should be such an abundance of potential students in a population of manual labourers. But when one looks into the quality, which is needed above all others to make a man a master-student, it is no longer surprising, for we see that the essential qualification is a power of steady application in any line of endeavour whatsoever. The potential student must have method and foresight as well.

Brains Ancient and Modern.

When the modern student compares his outfit of brain with that which was given to his ancestor in remote times he meets with another surprise. The men who lived in Europe 20,000 years ago were just as well equipped as he is as far as concerns size and form of brain. What did those ancient hunters do with so big a brain? They had no professional examinations to pass, no briefs to master, no leaders to write, no mathematical problems to solve, no ancient classic to translate, no sermons to prepare and preach. If brains were given to us merely for such purposes then those ancient hunters had somehow come by a superfluity. Brains, however, serve the needs of much more than the intellectual side of our lives; beneath the intellectual centres lie a myriad of others which subserve more menial duties—by the exercise of which we fill the cup of life's enjoyment. But even this explanation is but partial; the full explanation lies much deeper and has to be sought in a strange law which regulates the construction of all living structures. All such structures have been framed on the rule which provides a large margin or factor of safety. All our organs—our hearts, our lungs, our stomachs, and our brains—have been built to meet not the daily routine of life, but emergencies which occur only at critical junctures. The heart on an occasion can rise to ten times its usual output; the lungs, if pressed, can nearly do as well. As for the stomach, the less said the better; modern civilisation tends to throw an unfair burden on it. But as for the brain, the factor of safety law holds good; we have, and our ancestors had, about ten times more than ordinary occasions require; our superfluity was given us for emergency. It is just this emergency ration that the modern scholar has to depend on, and there are few, if any of us, who use this extra allowance to its full capacity. You may study to the utmost limit of your endurance, and by the mere act of study you may rest assured that you will do your brain no injury. Infinitely greater harm is done by misuse and disuse of the brain than by overuse.

Let me make certain that you realise that the brains I am speaking of are not those of children; to push education upon an immature brain is cruelty; I am speaking of the mature brain, the state reached by most of us about the nineteenth year; it is then that the brain cells have come to their complete outfit and connexions. By habitual study you may overtax your physical endurance; you may damage your bodies if you neglect to exercise them, but you certainly will not damage your brain. You will never succeed in using your brain up to its full capacity. At the age of 74 James Watt acquired a knowledge of German, and at 64 Goethe, the German, mastered several Oriental languages. For my own part I use sleep as my barometer; when I begin to find that sleep comes to me with sluggard steps or if there is a tendency for my mind to "race" when I lie down I slack off. There is no greater nonsense talked than that brain-work may bring on "brain-fever."

How to Attain the Student-Habit.

I have been speaking to you about the student-habit—seeking to explain why it is so difficult to acquire, but I have said nothing about how it is to be attained. There is nothing to be said; no one can teach it you; there is no royal and no easy road. Each one has to come by it for himself or herself by self-effort and by self-application. Nor have I said anything about a matter which every student soon discovers. Our brains have moods and tempers; like horses or the engines of motor-cars, they have to "warm up" before they will run smoothly and easily. The start is always the most difficult phase to manage. And often we are uncertain, when our brains start sluggishly, whether pressure will warm them up to study pitch or whether it is wiser to lay science or stiff reading aside and take to fiction. The healing power of a debauch of fiction is often marvellous in its results. The best brains are not like cart-horses which will do a turn at any hour; like race-horses they have their times off and times on. Therein each student is a law unto himself.

If I have been speaking to you who have still examinations to face I have also in mind those happier men and women who have left such ordeals behind them. Sooner or later they will discover that the student-habit, which is gained only by great and continuous effort, is soon and easily lost if not exercised. And they will also discover, as I found to my cost, that it is terribly difficult to get it back again. The medical man or woman who has lost the student-habit has become but a camp-follower in the great professional army to which we should all belong and in the activities of which we should all take a part if medicine is to prosper.

NOTES ON THE SURGICAL TREATMENT OF BRACHIAL BIRTH PALSY.

By JOHN GILMOUR, M.S. Durh., F.R.C.S. Eng.,
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The treatment of brachial birth paralysis, especially of the Erb-Duchenne variety, first attracted my attention at the Children's Hospital two years ago. Since then I have had the opportunity of treating several cases and of examining a number of others at the Royal Victoria Infirmary.

After having seen 25 cases of the palsy, one may safely say that the general impression that they mostly recover well, in time, is very misleading. It is said that one only sees the worst cases in hospital, and that there are numbers which do well at home. Up to the present I have not come across any evidence of this. On the contrary, an honorary colleague at the Children's Hospital, who has records of 40 cases, informs me that very incomplete recovery is the rule. Doctors are much more in the habit than formerly of referring their cases to hospital in the early months of the child's life. It is not surprising, therefore, to find that over two-thirds of the number under review did attend for examination and treatment before the end of the third month, most of them in the second month, when the ultimate result was still in doubt or before full recovery might reasonably be expected. Of the 17 who reported early only two can be described as having made a spontaneous recovery, while the others have not shown up much better than the last third who only attended at later dates after domiciliary measures had failed.

Whether it is admitted or not that one is justified in drawing conclusions from these facts, it is evident that there are numbers of children attending hospital with one or both arms crippled from birth for the treatment of which the unaided efforts of the masseur are inadequate.

Varieties.

Of those examined there were 23 of the Erb-Duchenne variety, two of the general arm variety, but none showing a pure Klumpke paralysis. On the obstetrical side all but three of the births were described as long or difficult. In one case the period of labour was short (five to six hours), and in two delivery was natural and unassisted. In the rest chloroform was used to facilitate instrumental or manual delivery. Three infants were said to have been asphyxiated and to have required prolonged resuscitation. The presentation was "vertex" in 16 cases, "breech" in four cases, and irregular in type in five cases. This analysis agrees roughly with that which Stransky made of 94 cases collected from the literature up to 1902. He blames direct pressure or traction upon the plexus in cases of difficult or prolonged labour in which anæsthesia was used, and in which a final rapid delivery was required for asphyxiated infants. Bailey states that overstretching will occur when the head and shoulder are separated more than 120°; and Peter and Bullard add that the stretching is increased by the rotation of the aftercoming part.

Ætiology.

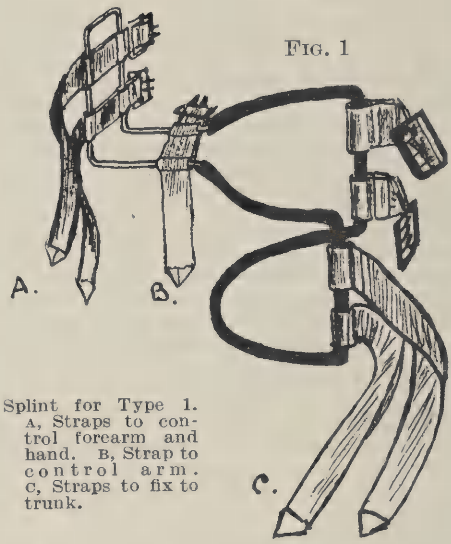
It is not possible here to discuss the ætiology of the condition at any length, but it is worth reporting that in each of the four plexuses which were exposed by operation a definite lesion was found. Of late years a considerable literature has grown up on this subject since T. Turner Thomas propounded the theory that the palsy is only a pseudo-paralysis dependent upon injury of the shoulder-joint produced at birth. Lange supports this view, and Binnie is inclined to credit it; but the weight of evidence of an experimental, operative, and post-mortem nature is all against it, and in favour of overstretching of the plexus as the primary lesion.

Experimental Lesions of the Brachial Plexus.

Fieux, Shoemaker, Prout, Sever, and Adson were all able to produce lesions of the plexus, when exposed in the cadaver, by traction. In the Erb type of paralysis they found that the nerves rupture from above downwards. The importance of the suprascapular nerve which frequently tears first because of its close peripheral attachment was indicated, and the need for its repair stressed because of its control of the external rotator muscles of the arm. Adson states that there is first a laceration of the deep cervical fascia, then of the unsupported epineurium and its vessels, and finally a separation of the nerve-fibres which occurs in the first instance between the ganglion of the fifth cervical root and the upper trunk, and if more force is used results in a partial avulsion of the ganglion itself along with the spinal root. Further strain causes avulsion of the sixth, then seventh cervical roots, and finally laceration of the fascia over the eighth root. He concludes by saying that "Inasmuch as injuries of the plexus are produced in the roots or ganglia, they seem primarily to be lesions of the nerve rather than secondary to lesions of the shoulder-joint. Minor injuries may be expected to recover partly or wholly; severer injuries rarely recover even with surgical treatment."

A. S. Taylor corroborates the impracticability of operating on the intraspinal lesions, although he is a strong advocate of early exploration in the less severe varieties. It is obvious that many degrees of injury occur, and that clinical varieties may be looked for which correspond to the gravity of the lesion. The cases under review illustrate this very well. In age they range from 7 weeks to 15½ years. Several distinct types can be distinguished.

Fig. 1



Splint for Type 1. A, Straps to control forearm and hand. B, Strap to control arm. C, Straps to fix to trunk.

Types of Brachial Birth Palsy.

Type 1. The Typical Case.—This is usually seen soon after birth with the characteristic "vertical arm" in which there is paralysis of the deltoid supra- and infra-spinati, teres minor, biceps, brachialis, and supinators. The arm is held in a position of internal rotation, the elbow is fully extended and cannot be flexed, and the wrist is often palmar and ulnar flexed. The arm cannot be abducted actively from the shoulder. Of this variety only three cases were seen, and in two early recovery is taking place. One of these came for treatment when nearly 2 months old, and the history is interesting.

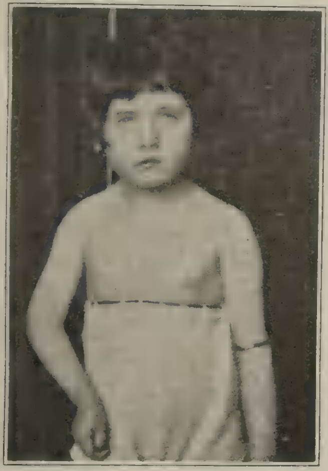
Case 1.—She is a second child, was born by the breech before the doctor came, and had the typical deformity in the right arm. When examined there were distinct signs of movement and a tendency to take up the position characteristic of Type 3 (to be described later). This could be overcome by manipulation easily, but the importance of preventing contractures was realised, and the mother was instructed to move the arm in such a way as to produce: (1) External rotation of the humerus (with elbow at 90°). (2) Forceful abduction of the arm and backward extension of the elbow to push the humeral head forward. (3) Full supination of the forearm and free movement at all the joints. To keep the paralysed muscles at rest a platform splint of thin metal made after A. S. Taylor's pattern (see Fig. 1) was applied, and it was only removed for massage and movements for ten minutes twice a day. Marked improvement in power and in movement had occurred in one month, and during the second the splint was left off for increasing intervals during the day to allow the arm to be exercised. It is worn at nights now until recovery is considered complete. This baby tolerates the splint without a murmur.

If a splint is objected to, the position which it secures of abduction and external rotation of the arm, flexion of the elbow, and supination, can be obtained by fixing the wrist over the top of the head by a strip of gauze passed under the opposite axilla.

The principles involved in this line of treatment are three cardinal ones: (1) Relaxation of paralysed muscles (splint); (2) maintenance of nutrition in these muscles (massage); (3) prevention of contractures (movement). Neglect of the first and third is a sure way to court the onset of complications which transfer the case to Type 3.

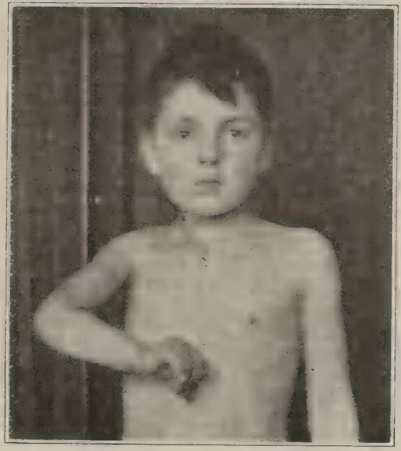
Type 2. The Irritable Type.—This is similar to the first type, but is complicated by an irritable "neuritis" of the plexus, and considerable fretfulness on the part of the infant who, as a result, tends to fix the arm closely to the side and to resist treatment. The prognosis is correspondingly less favourable, and unless adequate measures are adopted it will pass into Type 3. In this series eight of the children were described as irritable, particularly whenever the arm was touched. Six of these passed into the third group, two were subjected to operation on the plexus, and one was seen for the first time a few days ago.

FIG. 2.



Posture of Type 3.

FIG. 3.



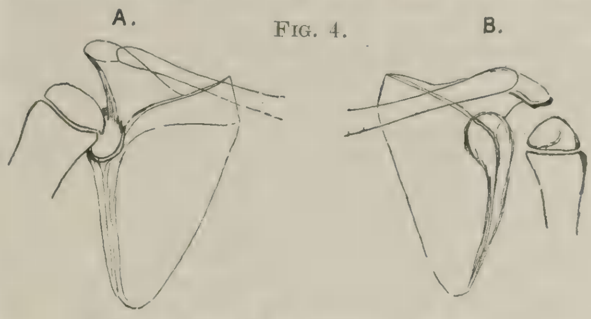
Showing total elevation of right arm.

Early fixation on the splint is therefore most important to relax the irritated muscles and prevent contractures, and to allow the inflammatory reaction in the neck to subside. Gentle massage keeps the weak muscles in tone meanwhile. After two months' rest gradual movement is practised and increased as toleration is established, and then the case is treated as in Type 1.

Type 3. Cases showing Contractures and the Progressive Deformities associated therewith.—These occur where treatment has been inadequate or neglected, and naturally develop only in those in which the lesion is neither too slight nor too great, since in the former recovery is likely to follow, and in the latter none will occur. Fairbank, in a study of 40 cases, found that 60 per cent. showed a definite tendency to muscle recovery, but also that 75 per cent. of them tended to develop contractures. This proportion is not an exaggeration, and it is a strong indication of the importance of proper early management of every case of Erb's paralysis. Seventeen of the cases I have examined have become thus complicated—a proportion of 68 per cent. The characteristic attitude of Type 1 is now replaced by a second posture which is fairly typical in Type 3. In this the arm is held slightly abducted from the side and slightly flexed forward and fully rotated internally; the elbow is flexed about 20° or 30° from full extension and cannot be extended; the forearm is usually fully pronated and cannot be supinated more than 20°; the wrist may or may not be dropped, and the hand retains some of its ulnar adduction. The effect of these contractures on the function of the arm is very crippling. With the elbow fixed at the side, for instance, the hand cannot be carried from the front of the body laterally to the line of the arm because there is no external rotation of the humerus possible. The absence of supination is therefore very marked, and as a result the hand is almost useless.

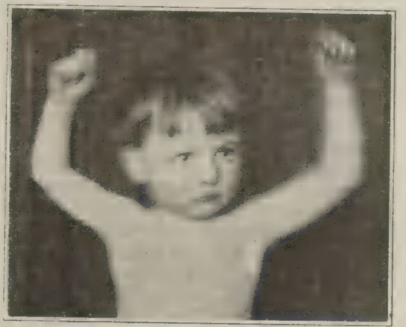
Abduction and forward elevation of the arm are also weak so that the hand, even pronated, cannot be raised to the mouth. Further scapular rotation, assisted by throwing the affected shoulder backwards to raise the ribs in front, adds but little more elevation to the level of the hand. (See Figs. 2 and 3.)

FIG. 4.



A, Normal shoulder. B, Subluxated shoulder.

FIG. 5.



Showing recovery after suture—right arm.

With the absence of functional activity disuse of the limb naturally follows very soon, the contractures become consolidated, vascular changes occur in the extremity of the limb, and an important subluxation is produced in the shoulder-joint. Frequently there is a subluxation of the head of the radius. Growth of the shoulder girdle and of the limb bones is seriously impeded, so much so that the child is apt to lose his balance and often stumbles from this cause.

The subluxation of the shoulder-joint appears after several months. It is easily overlooked in fat infants, but the rounded prominence of the humeral head, behind instead of in front of the tip of the acromion process, is characteristic. The humeral head looks backwards and lies on the postero-inferior margin of the glenoid cavity. It is held there by the strong internal rotation of the contracted subscapularis and pectoralis major, and by the downward and backward traction of the teres muscles.* The lack of support from the paralysed external rotators, the spinati, assists in this displacement and the joint capsule yields accordingly behind, whilst it contracts up in front.

As time elapses bony changes occur which "fix" the subluxation. The glenoid cavity remains small and undeveloped. It may become flat or even convex. The head of the humerus develops into a cone with a flattened side towards the glenoid. It lies at a lower level than normally. The acromion process, and sometimes the coracoid process, becomes bent forwards and downwards—probably from the unsupported weight of the arm, and forms a true bony obstacle to the reduction of the subluxation. (See Fig. 4.)

Radial subluxation is much less frequent, but must be considered due to the combined paralysis of the supinators and the contracting pull of the pronator teres. Contracture of the biceps may also tend to displace the head of the bone forwards and inwards. Turner Thomas described a case in his series of "Neglected Erbs," and was inclined to argue that this was a congenital injury just as he said the subluxation of the shoulders was, but such an explanation is not necessary in the presence of contractures. I have seen the same deformity follow contractures in infantile paralysis. In older children the crippled arm looks particularly small beside the healthy one, which may show a compensatory development. Other interesting features have been observed.

In one case the scapula was drawn up to the humerus by a contraction of the teres major and latissimus dorsi muscles, and this prevented the deltoid from using its full power on the arm, abduction to 50° only being possible. In another case the only residual weakness is in the external rotators of the right arm. This boy complains that he cannot write at school for long without "cramps" near the shoulder, and writes as well with the left as with the right hand. He has an interesting sympathetic paresis which has left him with distinct underdevelopment of the right side of the face, enophthalmos with pseudo-ptosis and a contracted pupil. In this case sympathetic involvement has not had its usual unfavourable significance.

When supination has recovered there is usually only a minor degree of weakness in the shoulder muscles, but contractures and subluxation when present convert this into a much more disabling condition. Recovery takes place from below upwards as a rule, so that in the Erb type of palsy any lingering paralysis in the forearm or hand means a grave prognosis.

The *electrical reactions* of the muscles of this group are not typical when partial recovery has ensued. I have generally found that the posterior fibres of the deltoid, the spinati, and the supinators give a feeble response with faradism and a brisk response with galvanism when the polar reaction may be normal or reversed. Thomas disputes any change in his attempt to substantiate his shoulder-joint theory of origin.

Sensory disturbances have only been found in the whole arm type, and then usually over the ulnar side of the hand and lower forearm. In such cases sensation to "pain" seems to be lost over almost as wide an area as "touch." Sherren has shown that section of the fifth cervical root is not usually accompanied by anæsthesia, and even the sixth cervical may be cut in some cases without any appreciable change in sensation. This, of course, accounts for the absence of disturbance in the Erb type of paralysis.

Operative Treatment.

Expectant measures are only justified in cases where full recovery is anticipated, or when no operative interference is contemplated. Once it is evident that only partial recovery will result, the question of operation should be considered. A. S. Taylor states that recovery should occur, if spontaneous, within three months. Wyeth and Sharpe advocate operation at one month if the lesion remains complete, and at three months if full power is not then regained. In 1903 the late Robert Kennedy, of Glasgow, advocated operation at 3 months of age, and his results are without doubt the most convincing of any. I have never explored the plexus at this early age. The three infants upon whom I operated were $1\frac{1}{2}$, $1\frac{3}{4}$, and $^{11}/_{12}$ years of age respectively, and the fourth was a boy of 9 years. There is no doubt, however, that the longer one waits the more firm is the scar-tissue about the roots of the plexus, and the greater is the actual gap, after a resection, between the nerve ends. At the same time growth changes have occurred which a successful early operation will eliminate. Operation was undertaken when the electrical reactions indicated a nerve block, and in each case was looked upon as an exploratory procedure. In two of the four cases it was possible to proceed further and to resect damaged nerve roots and unite the free ends accurately; but in the other pair it was only possible to dissect adherent and scarred fascia from the front of the plexus.

Clinical Records.

CASE 2.—First child. Male. Very difficult labour. Instrumental delivery with chloroform. Markedly asphyxiated. Vertex presentation. Left arm showed Type 1 paralysis. Attended hospital first when 3 months old. Contractures beginning to form. Splint ordered and worn from fourth month. Massage and electrical treatment given for a year. No improvement of any importance. Electrical reactions taken gave nil response to faradism in deltoid and weak response to faradism in spinati. Operation when 18 months old (8/3/24). External neurolysis. Dense cervical fascia removed exposing only atrophic strands in place of fifth and sixth cervical roots. No repair possible. Latest report on arm shows: General posture of paralysis remains but without contractures. Arm can be elevated forwards to 90°. Elbow flexed to nearly 90° and forearm supinated beyond mid-position. There is still some internal rotation but no subluxation. Child can use hand to steer a scooter.

CASE 3.—Fifth child. Male. "Shoulder presentation." Long labour. Chloroform and manipulation. Right arm shows Type 2 paralysis. First attended hospital when 3 months old. Sent to me by Dr. Glen Davison when 9 months of age. Arm had become Type 3. Splint ordered, with massage and movements. Electrical reactions continued to show no response to faradism in deltoid, spinati, and biceps, and only a feeble response to galvanism in biceps. At this time he could abduct the arm forward to 45°, supinate to mid-position, flex elbow fairly well, but had no external rotation. Operation when $1^{9}/_{12}$ years old (26/4/24). Thick fascia removed. Fibrosed fifth cervical root and twig from fourth cervical found and resected with suture of cut ends. (See Fig. 5.) Latest report is illustrated by accompanying photograph, where it is seen that he can abduct and elevate arm beyond 90°, externally rotate, and supinate.

CASE 4.—Vertex presentation; delayed shoulder. Chloroform and instruments. Asphyxia. Type 2. Irritable. Attended hospital at 1 month. Massage given. Referred to me by Dr. Davison at 11 months with no improvement. Electrical reactions showed nil response to faradism in deltoid, biceps, and brachialis, but biceps and all others reacted to galvanism. Immediate operation (20/9/24). Severe lesion of fifth and sixth spinal roots, with a second tear distal to upper trunk all involved in dense scar tissue. Fifth cervical root atrophic. Tension suture inserted to approximate distal nerves to stump of sixth cervical root. Re-exploration two weeks later to attempt to secure a nerve suture, but this was at once found to be impossible and wound was closed. Latest report: Arm hangs in position of Type 1, and can be moved very little. Sympathetic pupillary change is present in this case, and the prognosis is hopeless.

CASE 5.—Nine years. Male. Thirteenth child. Vertex presentation. Short labour. Both arms paralysed at birth. Right recovered in one month. Left shows clinical picture of Type 3. Contractures and subluxation present. Electrical reactions. To faradism: very weak response in posterior fibres of deltoid, some inactive. Doubtful response in supraspinatus. No response in infraspinatus.

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* The teres minor has been shown to draw down the humerus and keep the head of the bone in the glenoid cavity when the deltoid comes into action.

Supinators both feeble. Flexors active to galvanism. Brisk response with A.C.C.>K.C.C. in affected muscles. Operation, 5/5/25. Taylor's combined operation on shoulder-joint and plexus. With regard to the plexus a firm area of fibrous tissue was found in an attenuated fifth cervical root. This was resected and suture of nerve ends found possible. It is too early, of course; for results.

In each of the cases the weak arm is raised in a plaster case and fixed with the head inclined towards it to take tension off the sutured nerve ends.

Treatment of Contractures and Subluxation of Shoulder.

It will be seen that in the last case an attempt was made to deal with the complications of contractures and the subluxation. This represents a useful line of attack to improve the function of the limb. Indeed, so great an improvement is said to follow this that Thomas claims to cure the disability and the palsy by so doing.

Most of the patients exhibiting these complications were still below the age of 6, but two were 9 and one 15½ years of age. In the younger patients the bony changes are less marked, but in the older group the subluxation is very prominent, and the acromion and coracoid processes act as bony obstacles to reduction and elevation of the humerus. The manipulative method of Whitman is applicable, therefore, to the younger children, or one or other of the operations described by Fairbank, Sever, Thomas, and Taylor may be utilised in any of the cases.

I have treated three by open operation, in each case combining the division of the pectoralis major and subscapularis insertions (Sever's method) with section of the inner part of the capsule of the joint (as Fairbank suggested), because without it full replacement of the humeral head was found to be impossible. In Case 5 the coracoid process had to be partly removed, and the coraco-humeral ligament divided to allow of full external rotation. The short head of the biceps was, therefore, sutured to the side of the coracobrachialis and pectoralis minor. The after-treatment of these cases is still progressing. Plaster is applied with the arm externally rotated and abducted, the elbow flexed and forearm supinated, and after three weeks a Taylor's splint replaces this so that movements, at first passive, and massage may be practised once a week. When the new joint is consolidated and the muscles have regained control the splint will be discarded. In these cases Taylor now combines exploration of the plexus, and instead of plaster he uses a special head and arm brace for three months.

One small group of cases remains in which complete atrophy of the deltoid and spinati is present. If scapular movement is present arthrodesis of the shoulder-joint will improve the usefulness of the limb. Such a procedure has not yet been tried.

This communication is a preliminary one, and will be followed by a further report on the cases under treatment. My thanks are due to Dr. W. Ogden and Dr. Glen Davison for their cases, and to Dr. George Hall and Mr. H. M. Johnston for the opportunity of examining their cases.

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A REPORT UPON NINETY-TWO CASES OF RHEUMATIC DISEASE IN CHILDHOOD.

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THE Horsfall hospital wards of St. Mary's Home, Broadstairs, have, since 1921, a period of three and a half years, admitted 92 cases of rheumatism, carditis, and chorea. Their treatment has been the provision of fresh air, sunlight, warmth, and good food, combined with an amount of rest varying in accordance with the amount of active infection; this entails regular medical supervision and good nursing management to ensure contentment of the children while under considerable restraint. The treatment aims at preventing or arresting the progress of rheumatic infection, especially in the heart. At the end of certain periods, depending at best upon clinical and at worst upon financial considerations, the children are returned home. Subsequently, by means of circulars, the discharged cases are sent for and re-examined in London. In May, 1925, about two-thirds of those circularised arrived for this purpose, and I may here remark that the proportion of patients so responding is bound to fall as time goes on—an illustration of the disadvantages with which one works single-handed, compared with advantages possible under some such system of team-work as I venture to recommend below.

The report falls into two parts: (*a*) The results of observations of the children while in the wards; (*b*) the results of subsequent re-examination of discharged cases.

In estimating results, the subjective sensations of the patients and their parents' opinions are of very slight help, except in severe carditis and in chorea; experience points to the following three criteria as furnishing the most useful indications of progress or the reverse: (1) Quiescence or recrudescence of symptoms; (2) constitutional signs; and (3) cardiac physical signs.

(*A*) *Observations in the Wards.*

(1) *Recrudescence of symptoms* may be summarised as follows:—

(*a*) *Acute Rheumatism.*—There has, in three and a half years, been only one case that has had any severe arthritis with fever, and this was a girl with very severe pancarditis, who died later on. Only one other case complained of occasional pains in the limbs, and this was without fever.

(*b*) *Chorea*, once abolished, has recurred in three cases only—in all of them as a result of a definite emotional upset. In two other cases the movements were never completely got rid of; they appear to be more difficult to check in girls of ample physical proportions.

(*c*) *Tonsillitis* is more common and is troublesome, and the cases are quickly isolated owing to their being very infectious; in the first "epidemic" that occurred the hearts of at least two children seem to have suffered severely.

(*d*) *Simple Pyrexia* occurs occasionally and, as it yields to salicylates in most cases, is probably rheumatic; it has twice been accompanied by fresh carditis.

(*e*) *Scarlet Fever* occurred in one case and was followed by fairly severe scarlatinal rheumatism without further carditis.

(2) *Constitutional signs* are noted as follows:—

(*a*) *Pallor* seldom persists; if it does so it is a bad sign, but "a good colour" is often a sign that flatters.

(*b*) *Weight* goes up in all but rapidly deteriorating cases; only a very rapid putting on of weight can be taken as a really good sign by itself.

(*c*) *Pyrexia.*—The nearer the temperature tracing approaches to a straight line, the better a case appears to be doing.

(*d*) *Heart Failure* occurs only in the severest cases; a heart may be able to respond to a considerable degree of effort while being slowly and progressively infected. Response to effort is therefore no criterion.

(*e*) *Tachycardia.*—The rheumatic poison has an especial effect in producing a rapid and excitable heart-beat, quite apart from gross cardiac lesions; in such cases there is little or no respiratory variation in the pulse-rate. Correct charting of the pulse-rate is of the utmost importance, since the visit of the doctor may cause a temporary tachycardia. There is no effect of treatment so definite as the change, after a longer or shorter period of time, from this rapid excitable pulse-rate, to one of a more deliberate and uneven rhythm, the first sign of improvement being a noticeable slowing of the rate on instructing the patient to expire slowly after taking a deep breath ; as recovery proceeds the sign becomes more and more marked. Digitalis is successful in slowing the rate of these hearts in a certain number of cases, but the effect is usually lost on discontinuing the drug. While it is possible that a slowing of the pulse might also be obtained in children allowed to get up and to go about, I feel that the questions of immunity which determines the progress or arrest of infective carditis are more safely dealt with under the conservative methods of rest in bed.

(3) *Physical Signs in the Heart.*—Dilatation of the heart borders should be regarded, when following an attack of rheumatism, as evidence of an infected myocardium. It is often accompanied by a systolic murmur which sufficient rest in bed abolishes. The mitral diastolic bruits, described by Dr. W. B. Cheadle, are very common and are of the utmost importance in prognosis, especially as regards mitral stenosis and ultimately auricular fibrillation. As in the case of tachycardia, the difficult question of valvular infection seems to me to be more safely dealt with by rest in bed until constant auscultatory signs and a quiet pulse-rate show the endocarditis to have been arrested. Aortic murmurs do not appear to undergo any favourable modification.

The result of the work as organised in the wards is that there is a slow but steady stream of children passing from the rest wards to the convalescent ward. Out of the 92 cases under treatment 73 have been girls ; the average age on admission was 9·3 years, the youngest child having been 4½ years old. The average stay of the patients was six months. Beginning in October education will be given in the wards by a fully certificated mistress.

(*B*) *Examination of Discharged Cases.*

Of 75 cases discharged before the spring of 1925, six had died ; all were cases of severe and advancing cardiac rheumatism and were, practically speaking, sent home to die. Of the remaining 69 cases just two-thirds were re-examined, and of these 46 cases 15 showed, or had shown, subsequent signs of active rheumatism, chorea, or carditis. In eight of these there had been fresh acute rheumatism, shortly after returning home ; in two cases mitral disease had slowly developed along with continual chorea ; in two cases there was progressive evolution towards mitral stenosis in spite of reports of perfect health from the patients and their mothers ; and in three cases there had been chorea off and on for from one to two years without any carditis. The remaining 31 cases had held their own and had had no relapse.

While some of these cases appear to have justified the results of the treatment they have had, one is bound to admit that other cases, who, after a short period of treatment, were withdrawn against advice, had done equally well ; on the other hand, certain cases, thought to have done well at Broadstairs, were disappointments. There are, I think, so many variations in the conditions to which these cases are exposed, that in order to investigate fairly the results of any type of treatment for rheumatism in childhood, it would be desirable to select a series of cases as uniform as possible.

Some of these variable factors may here be reviewed.

(1) Number of attacks of rheumatism before beginning treatment.
(2) Presence or absence and severity of carditis.
(3) Mode of onset of disease—acute, insidious, or choreic.
(4) Home conditions of the patient, especially after returning from treatment. One of my most disappointing cases said that the damp stood upon the walls of her home.
(5) Length of time under treatment.
(6) Performance or otherwise of tonsillectomy as part of the treatment.

Doubtless many of the variations in the onset and virulence of rheumatic infection are bound up with questions of individual and tissue immunity, to which at present we have no answer. Nevertheless, it should be possible by careful selection from a large number of cases to form groups for observation in which all the above variable factors should be as uniform and as favourable as possible. For such a purpose the following organisation would seem to be required :—

(1) A *central building* in London (or other city), by means of which : (*a*) Accurate histories could be obtained from patients' relations. (*b*) Cases could be taken, if desired, by reference from the general hospitals. (*c*) Visitors could report on home conditions and endeavour to get house repairs effected in special cases. (*d*) Physicians could select and group fresh cases, probably giving preference to early cases, as in tuberculosis. They would also be able to re-examine cases returned from rest homes. (*e*) Records could be kept.
(2) *Rest homes* for carrying out treatment.

From re-examination of these discharge cases one cannot fail to learn that the most accurate prognostic signs are to be found in repeated examinations of the heart ; quiescence of symptoms is deceptive, and in America they have learned that even three years must elapse before it can be assumed that a favourable case is likely to be free from recrudescence. Similarly, constitutional signs are unreliable. I saw a boy in May, 1925, who had a really healthy colour, and had recently been running about ; he has had about two attacks of rheumatism yearly since 1921, the heart is greatly enlarged, and shows mitral systolic and diastolic bruits, and an aortic diastolic murmur ; his last attack had been in February, 1925. If, however, by any management, such unfavourably developing physical signs can be arrested, then, as the period of life approaches at which the heart is less susceptible to infection, the chances of an active and useful life are increased.

Clinical and Laboratory Notes.

TWO CASES OF LATERAL SINUS THROMBOSIS.

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THE following cases of lateral sinus thrombosis may be considered worthy of record, as in each instance I performed a radical mastoid operation and ablated the infected lateral sinus without tying the internal jugular vein, with successful results.

CASE 1.—B. E., a girl aged 14, was admitted to hospital with a history of discharge from the left ear for four years. She complained of pain over the left side of the head and in the left ear, and gave a history of attacks of shivering and vomiting. On admission the patient was very ill, with a temperature of 97° F., pulse-rate 120, and she had tenderness over the left mastoid process. A mastoid operation was performed and a large extradural abscess evacuated. There was thrombosis of the lateral sinus down to the jugular bulb ; the sinus was opened and a septic clot evacuated. The jugular vein was not tied. On the following day the patient's condition was still bad, but there had been no rigors ; on lumbar puncture the cerebro-spinal fluid was found to be normal. Two days later the temperature rose to 104° F. and the pulse-rate to 140. She vomited several times during the night. There were no rigors. The wound was reopened and more septic clot was turned out of the lateral sinus. From this date the patient made an uninterrupted recovery.

CASE 2.—I. A., a woman aged 21, was admitted to hospital with symptoms of acute mastoiditis on the left side. Her temperature was 103·6° F. and her pulse-rate 136. A mastoid operation was performed ; the bone was very sclerosed, and a perisinus abscess was present. The lateral sinus was exposed for one inch, and the wall of the sinus was seen to be healthy and felt to pulsate. Her condition improved after the operation for three days, when her temperature rose again. On lumbar puncture the cerebro-spinal fluid was found to be normal ; a blood count gave a leucocytosis of 12,500 per c.mm. Two days later she had two rigors ; the cerebro-spinal fluid was still normal, and the leucocyte blood count was 15,000 per c.mm. The wound was reopened and the lateral sinus was further exposed; the wall was found to be covered with grey granulations. The sinus was opened and a septic clot evacuated; there was free bleeding from both ends of the cut sinus. The internal jugular vein was not tied. Three days later the leucocyte blood count had come down to 6000. She made a slow but uneventful recovery.

Comments.

The tendency of recent writers, particularly in America, in dealing with the surgical treatment of lateral sinus thrombosis, has been to advocate ligation of the internal jugular vein in every case. The two cases here reported show that no hard-and-fast rule should be laid down about the necessity for invariable ligation of this vein. These patients are usually so gravely ill that it is eminently desirable for the surgeon not to undertake measures of greater severity than are absolutely necessary. Mr. Richard Lake has emphasised the importance of speed in carrying out surgical procedures in such cases. Ligation of the internal jugular vein does not necessarily prevent extension of the infection to the systemic circulation because of the establishment of collateral venous circulation. Laurens,[1] moreover, points out that the statistics of ligation and non-ligation show equal percentages of recovery.

I desire to express my thanks to Mr. Lake for the opportunity of operating on these two cases in his wards at the Royal Ear Hospital.

A CASE OF
ATROPHY OF RENAL ORIGIN IN A YOUNG INFANT.

BY CATHERINE CHISHOLM, M.D. MANCH.,
AND
EDITH F. WILLOCK, M.B., B.CH. DUB., F.R.C.S. IREL.

IT seems probable that the following case of renal atrophy in a young infant is worthy of record.

A female infant, aged 5 weeks, was admitted to hospital with a history of dyspepsia and loss of weight. She was an eight-months infant and had been almost entirely breast-fed. On admission she weighed only 4 lb., and showed signs of recent wasting; no cardiac, respiratory, or other abnormalities were detected; the urine was not examined as maintenance of warmth and careful handling were essential in her existing condition.

The patient was given breast milk feeds but failed to make much progress, though dyspepsia was not evident, and after a month she was placed for three weeks in an oxygen cot, in which she breathed air with 40 per cent. oxygen and the accumulation of her own expired carbon dioxide for some eight hours out of each 24.[1] With this treatment satisfactory progress and gain in weight commenced and continued for six weeks after removal from the cot, although during this period the breast milk was discontinued.

Improvement was so satisfactory that the infant was vaccinated, and lactified milk feeds were being changed to simple milk and water preparatory to discharge, when an attack of dyspepsia supervened. The attack was not severe but it apparently sufficed to upset the balance, and for the ensuing eight weeks the infant remained obstinately stationary in weight, and the clinical picture was definitely one of atrophy.

There were occasional manifestations of mild dyspepsia, the appetite was poor, and the skin developed a curiously yellow tinge, though no bile was present in the urine. At this time a blood count showed 3,530,000 red cells and 20,000 white cells, with hæmoglobin 45 per cent. A second period of treatment in the oxygen cot was then given for a month during which some general improvement and gain in weight occurred. Some diarrhœa was present at times. Improvement continued for a short period after removal from the cot, but a relapse then took place, with anorexia, dyspepsia, and general deterioration. Dietetic treatment had no effect, and finally pulmonary complications developed and death ensued (aged 7 months).

The blood count a few days before death showed 5,500,000 red cells, 22,900 white cells, with 55 per cent. hæmoglobin. Von Pirquet reactions were negative, and X rays, at the age of 5 months, showed no bony changes.

Post-mortem examination revealed some pulmonary consolidation, a dilated stomach, enlarged mesenteric glands, and exceptionally small, finely granular kidneys with adherent capsules. Microscopically both kidneys showed well-marked fibrosis and atrophy, due to long-standing chronic nephritis, probably fœtal in origin.

Similar Cases on Record.

Barber[2] discusses ten cases of renal dwarfism and refers to others recorded by Paterson, Fletcher, and others. Greene[3] has reviewed the literature on chronic nephritis in children, and has collected 27 cases. Thursfield[4] has reported a case of chronic interstitial nephritis (? congenital) and renal dwarfism in a girl aged 12½. Barber's cases ranged between 11 and 20 years of age, and three were still alive at the time of writing. In Greene's series the eldest was 10 years old and only three were in the first year of life. In all cases the children were very small and undersized from birth; Barber states that as a rule the lack of development becomes more striking after the sixth or seventh year.

Albuminuria was present in all of these cases in which the urine was examined (26), except one, and in this case the urine was only examined by a nurse; in one of Barber's cases no albumin was present at the age of 3½ years, but appeared later. Bony deformities, mainly genu valgum, were present in eight out of Barber's ten cases; these usually developed later than those of ordinary rickets, but radiologically resembled them. Osseous changes were also present in Thursfield's case, and in those of Greene in which radiographs were taken. Post mortem the kidneys examined were all very small and granular and showed marked chronic interstitial nephritis, probably of long standing.

Commentary.

The case recorded in this note undoubtedly belongs to the class of renal atrophies; clinically, the infant was definitely atrophic, and was, indeed, selected in consequence as a good experimental case in which to observe the effects of oxygen on atrophic infants. It is unfortunate that no record of the presence or absence of albuminuria was made; there was never any œdema or polyuria to call attention to renal disease, and albuminuria may have been absent, as in the case described by Barber referred to above. The absence of osseous changes, as shown by X rays, in the case described may be accounted for by a late development of these changes.

It is extremely uncommon to find any record of this rare condition at such an early age; Greene has collected only three cases under 1 year of age from the literature, and in none of these had any X ray examination been made. Our case suggests that the bony changes arise later, as these have been almost invariably recorded in older children, if examined by X rays.

References.—1. Botwood, Raper, and Willock, Brit. Med. Jour., 1925, i., 730. 2. Barber: Quart. Jour. of Med., 1920–21, xiv., 205. 3. Greene: Amer. Jour. Dis. of Children, 1922, xxiii., No. 3, p. 183. 4. Thursfield: See Wyllie, Proc. Roy. Soc. Med., 1924, xvii.

Manchester.

ROYAL ISLE OF WIGHT COUNTY HOSPITAL.—At a meeting of the governors, presided over by Princess Beatrice, it was decided to reconstruct the old portion of this hospital at Ryde. The scheme, which will cost £15,000, includes the enlargement of the X ray department, which deals with more than 3500 patients annually.

HOSPITAL ACCOMMODATION AT LEEDS.—Dr. J. Johnstone Jervis, medical officer of Leeds, reports that the hospital accommodation of that city is inadequate in the sense that it is badly distributed rather than insufficient. All the voluntary institutions have long waiting-lists, while the Poor-law infirmaries are only partially occupied. "Some of the latter," he says, "are buildings of comparatively modern structure, well situated and well equipped, and would make ideal hospitals for the treatment of the sick of all classes of the community, including those who are able to pay a reasonable fee for their treatment." He therefore suggests that the law should be so altered as to allow of the doors of the Poor-law infirmaries being opened to the whole community.

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[1] G. Laurens: Chirurgie de l'Oreille, 1924, p. 265.

Reviews and Notices of Books.

APPLIED MEDICINE.

Social Aspects of Mental Hygiene. Addresses by FRANKWOOD E. WILLIAMS, C. MACFIE CAMPBELL, ABRAHAM MYERSON, ARNOLD GESELL, WALTER E. FERNALD, JESSIE TAFT. London: Humphrey Milford; Oxford University Press. New Haven: Yale University Press. 1925. Pp. 150. 7*s.* 6*d.*

An Approach to Social Medicine. By FRANCIS LEE DUNHAM, M.A., M.D., Lecturer on Social Medicine, Johns Hopkins University. Baltimore: The Williams and Wilkins Co. 1925. Pp. 242. $4.00.

THE psychiatric social worker is a species peculiar to the North American continent where, however, it flourishes abundantly. In the *Mental Hygiene Bulletin* for June, 1925, there were described courses of instruction in no less than 11 schools, colleges, and universities which are organising summer teaching in psychiatry and mental hygiene for lay women. The students at these courses will for the most part have been college graduates. By this time they have been taught about complexes and fixations, about adenoids and tuberculosis, and some of them have even had some superficial experience of the use of a stethoscope. Thus equipped, they have no difficulty in finding professional employment; courts, prisons, hospitals, asylums, industrial corporations, and innumerable voluntary health agencies demand their services. The average doctor they feel, and perhaps reasonably, is rather less well equipped than themselves to deal with behaviour problems, though he may be consulted when it is desired to rule out adenoids. For the most part they will treat the psychiatrists with respect, for thence comes their learning—but they are a profession sui generis and responsible not to the medical profession, nor to any ministry of health, but only to the lay organisation which happens to employ them. The lectures collected under the title Social Aspects of Mental Hygiene are examples of the tuition which the psychiatric social worker is getting; selected examples it must be admitted, for the writers are among the best known and rightly respected of American mental hygienists. It is as such that English doctors should read them, not expecting to learn anything about the origins of behaviour that they had not heard of before.

Dr. Dunham's book goes much deeper. A practising psychiatrist, living, one imagines, in an atmosphere of philosophy and sociology, he has been brought to examine very fundamentally the tendencies both of social service and of psychiatry. "The aim of preventive science, applied to welfare," he finds, "embodies a synthetic reconstruction of the existing situation, in the accomplishment of which an analysis of the various social fields is fundamental." Society is a laboratory wherein, if we would learn, the experimental method must be rigidly applied and the resulting knowledge reduced as far as may be to comparable, measurable, data. Among the basic factors of social life which we must learn increasingly how to estimate—and estimate quantitatively—are health, intelligence, and character. The greatest of these and the hardest to assess is character. But the analytical method, derived from much experience and insight, which Dr. Dunham describes, does indeed constitute an approach. In spite of an unfortunate addiction to four-syllable words, Dr. Dunham's book is easily read and full of stimulating and well-organised ideas.

Personal and Community Health. By CLAIR ELSMERE TURNER, Associate Professor of Biology and Public Health in the Massachusetts Institute of Technology. St. Louis: C. V. Mosby Co. 1925. Pp. 426. $2.50.

THIS book differs from the numerous other college text-books of hygiene at present rife in America, in that it combines public with personal health. In this respect it registers an advance. The layman is likely to get a more wholesome as well as a more useful knowledge of hygiene when he considers the subject as a social reformer rather than as a valetudinarian. Moreover, as this text-book shows, it is possible to write more convincingly about the principles of preventive medicine than about the rules of private well-being. The latter are so numerous, so varied, many of them so ill-founded, that any writer must be constantly on his guard lest he preach to the less critical college student doctrines that he knows would be challenged in a society of physiologists. Such a doctrine is the rule that we should drink six glasses of water a day, and it is here presented (p. 33) without regard to the heat of the day or the activity of the drinker.

Three-quarters of the book is occupied with the teaching of preventive medicine. The outline followed is as orthodox as the teaching. There is a short history of preventive medicine in which the origins of epidemiology are curiously introduced after the work of Pasteur. There is very properly a chapter on immunity which contains some ingenious guesses, as, for example, that anaphylaxis explains a possible inherited susceptibility to tuberculosis; chapters on water-supply and waste disposal, which are the best in the book, and as an appendix the 1916 report of the Committee on Standard Regulations of the American Public Health Association, which describes briefly the commoner communicable diseases and the methods of control then available.

The book contains few errors for a first edition, is well printed and bound, and as readable as college text-books are wont to be.

SURGERY.

A Synopsis of Surgery. Seventh edition. By E. W. HEY GROVES, M.S., M.D., F.R.C.S., Surgeon to the Bristol General Hospital, and Professor of Surgery, Bristol University. Bristol: John Wright and Sons, Ltd. 1925. Pp. 671. 17*s.* 6*d.*

THREE years have elapsed since the sixth issue of this useful synopsis, and throughout the book there is frequent evidence of careful revision, the subject-matter as presented being absolutely abreast of modern surgical advances. The section on abdominal disease, by Mr. D. G. Tasker, is a good example of the general standard of excellence. It is pleasant, for example, to find Barnard's classification of subphrenic abscess clearly given, and a compendious account of diverticulitis of the colon. A number of new line drawings are designed to elaborate the necessarily short description of certain subjects. It is really extraordinary what an amount of up-to-date surgical knowledge Prof. Hey Groves has compressed into so small a volume.

Infections of the Hand. Fifth edition. By ALLEN B. KANAVEL, M.D., Professor of Surgery, Northwestern University Medical School; Attending Surgeon, Wesley Medical Hospital, Chicago. Philadelphia and New York: Lea and Febiger. 1925. Pp. 449. $5.50.

IT was largely owing to the work of Kanavel in Chicago that this subject began to attract more widespread attention in this country, and his monograph is now well known. The book is happy alike in the practical research upon which the clinical work is founded and in the presentation of the diagnosis and treatment of these grave infections. The present edition has been improved in one very important respect. In previous editions, though the more serious disasters following inefficient treatment were described, their treatment (apart from prophylaxis) was not made very clear. A new section has now been introduced, dealing exhaustively with the treatment of stiff fingers, large scars with contractures, and so on. Continuous elastic traction on fingers fixed either in flexion or extension is excellently illustrated. How to make good skin defects from the abdominal wall is also given in greater detail. The book should certainly form part of the student's and practitioner's armamentarium.

Diseases of the Rectum and Pelvic Colon. Second edition. By MARTIN L. BODKIN, M.D., F.A.C.S., Rectal Surgeon, St. Catherine's Hospital, Associated Surgeon, Broad Street Hospital, and late Rectal Surgeon of the Bushwick, Williamsburg, and St. Mary's Hospitals, New York. New York: E. B. Treat and Co. 1925. Pp. 487. $6.

THIS edition is improved by the addition of three chapters and by general revision. There is a new chapter on the relation of the intestinal flora to the simple catarrhal diseases of the colon and one on the irrigation of the colon, which emphasises the principles of a treatment which has been much abused. The author recalls the original and correct technique and rationale. There are admirable introductory chapters on general examination of the patient which will teach the student how to approach a case of rectal disease, and no reader can forget the value of digital examination. The stress rightly laid on this recalls the teacher who, for the sake of his students, has a finger-stall hanging at every bedside. The work of English surgeons, it is pleasant to find, has not only been noticed in America, but is evidently thought worth mention in a text-book. Both students and practitioners will find this well-printed and illustrated book useful.

Minor Surgery. By L. R. FIFIELD, F.R.C.S. Eng., Surgical First Assistant and Registrar; Demonstrator of Minor Surgery, London Hospital. London: H K. Lewis and Co., Ltd. 1925. Pp. 431. 12*s.* 6*d.*

THE author has yielded to the importunities of his friends in writing a book on minor surgery as it is taught at the London Hospital and the interest centres largely in the local colour of the teaching. He closely follows Kanavel in treating infections of the fingers, and this section might with advantage have been given in even greater detail. There are numerous illustrations and the line-drawings are not uniformly good. The book will have to compete with a considerable number of other handbooks on minor surgery already on the market.

MALIGNANT DISEASE OF THE TESTICLE.

By HAROLD R. DEW, F.R.C.S. London: H. K. Lewis and Co., Ltd. 1925. Pp. 168. 21*s.*

THIS book is the author's Jacksonian essay on the pathology, diagnosis, and treatment of testicular new growths. After dealing with the anatomy and development of the testicle he discusses, what has long interested and at the same time puzzled pathologists, the morbid anatomy and histology of new growths of the testicle. The multiplicity of references given in this chapter is alone sufficient to show the industry with which the author has foraged amongst works bearing on this subject, and taking into consideration the confusion that still exists, his method of classification and description is remarkably clear. In the final chapters dealing with prognosis and treatment he puts in a strong plea for the radical operation. In his opinion the results of simple orchidectomy have long been a reproach to surgery, and in all cases, except those in which a palpable mass can be felt, an effort should be made to remove the lumbar glands as well as the diseased testicle. Although far removed from the testicle the glands are readily accessible, and in about 60 per cent. of cases admit of removal. The work contains many excellent illustrations and five coloured plates, and is certainly the best monograph on this subject that we have come across in the English language.

EMPLOYMENT AND WELFARE OF JUVENILES.

A Handbook for those Interested in Choice of Employment and After-care. By O. BOLTON KING. London: John Murray. 1925. Pp. 244. 6*s.*

THE theme of this book is the after-care of children who have passed the school age, and probably most readers will be surprised at the very wide net spread by after-care agencies, whether official, through State or local municipal provision, or through more or less private non-official societies. In the author's own words, "After-care takes the whole of the youth's life within its province, looks after his education, his amusements, his moral health—aims at making the man and the citizen." And besides this general welfare movement, there are the numerous "choice of employment" schemes, which are aimed at fitting square pegs into square holes. In respect to these Britain lags behind Germany, Belgium, and the United States, but in matters of general social welfare Britain may fairly claim to lead. The author deals with the subject in a very comprehensive way; few agencies can have escaped his notice. On this account the book is invaluable to all social workers. Its chief scientific interest is in dealing with vocational selection by means of tests. It is already clear that general intelligence tests alone are of little value, that tests of specific capacities are essential, and, in addition, that temperamental qualities require study. Having decided what specific capacities are required in any particular branch of trade, and having devised certain tests for these qualities, there still remains to discover how far the results obtained correlate with the actual working capacities of the workers. Much experimental work, therefore, is still necessary, and, as Mr. King points out, even with a perfect system of tests it not infrequently happens that the work for which a man has great aptitude is not congenial to him. Mechanical efficiency must be supplemented by contentment. An appendix gives valuable information regarding a large number of common trades.

The practitioner called upon to express opinions on the physical fitness of youths for certain trades will find here a basis for a much wider view than the purely medical.

NURSING.

Handbook for Queen's Nurses. First edition. By "Some Queen's Superintendents." London: The Scientific Press, Ltd. Pp. 76. 1*s.* 6*d.*

A HANDBOOK of district nursing has long been a desideratum, and this one, written by "Some Queen's Superintendents," although a modest volume, should help trained nurses who are beginning work on the district. So interesting is the reference to the history of district nursing that one regrets its brevity. The chapter on the duties of the district nurse reveals at once the enormous opportunities presented to those who undertake the nursing of the sick in their homes. "Her task is not only the treatment of disease but the education of her patient and his friends in the essentials of hygiene, so as not only to prevent all avoidable infection, but to raise the standard of health in each household she visits." It is this aspect of district nursing that makes it attractive to nurses whose gifts in these directions fit them for posts of responsibility.

A Reference Handbook for Nurses. Fifth edition. By AMANDA K. BECK, R.N. London and Philadelphia: W. B. Saunders Company, Ltd. Pp. 288. 7*s.* 6*d.*

THIS handbook of convenient size for quick reference should achieve the end for which it was designed, being well produced and containing well-selected information invaluable both to student nurses and to private nurses called upon to meet emergencies. The subject-matter is based upon a collection of notes made by the author throughout her training and nursing experience, and is obviously the result of intelligent observation and the careful record of facts. In addition to the notes collected are several articles by eminent physicians and superintending nurses, and the whole comprises a book eminently suitable to the needs of a nurse, and one which in time would come to be regarded as a friend and support. The chapters on the Preparation of Foods and Food Constituents are noticeably good, and there are a few clear illustrations.

Medikamentenlehre für Krankenpfleger und Krankenschwestern. Fifth edition. By Dr. PAUL FLEISSIG, Apothecary to the Hospital and Lecturer in Practical Pharmacy in the University, Basle. Berlin and Vienna: Urban and Schwarzenberg. Pp. 197.

THIS book should form a useful addition to a nurse's library. It is concerned with the drugs and apparatus connected with drugs used in hospital and in practice, and gives a simple account of their origin and use which will make the work of the nurse more interesting. It is by no means a book to be learnt off by heart, but is full of useful facts and hints, given by one who likes to have things done properly and who has at his command a large number of contrivances to meet contingencies arising in the wards. The chapter on Winke, the expressive German word for "tips," has evidently been congenial work to the author. We are not astonished to note that the work has reached a fifth edition.

THE LIVING EYE.

Microscopie de l'Œil Vivant. Diagnostic Précoce et Sémiologie des Affections du Segment Antérieure de l'Œil. Par F. ED. KOBY, Bâle. Paris: Masson et Cie. 1924. Pp. 240. Fr.25.

Slitlamp Microscopy of the Living Eye. Early Diagnosis and Symptomatology of Affections of the Anterior Segment of the Eye. By Dr. F. ED. KOBY. Translated by CHARLES GOULDEN, O.B.E., F.R.C.S., and CLARA LOMAS HARRIS, M.B. London: J. and A. Churchill. 1925. Pp. 221. 10*s*. 6*d*.

Dr. Koby's treatise on the use of the slitlamp, especially as it is now available in English, should prove of great value to ophthalmologists interested in what is a most promising innovation in methods of examination of the eye. The slitlamp is rather more of a novelty in this country than it is abroad, and until lately all the apposite literature has been in German. It was avowedly in view of this that Dr. Koby wrote his book for the French ophthalmologist. He has produced a clearly written work in a language inherently suited to the expression of scientific thought, a book which no one interested in the microscopy of the living eye can afford to miss. Precise details of apparatus and technique are given with explanations of the optical conditions present. Certain points, such as the thermal currents in the anterior chamber, the structure of the lens, and the changes in pigmentation of the cornea, are dealt with more fully than in any other book on the subject. The illustrations are good, but lose something in the French edition by the type of paper on which they are printed. In the English edition this fault disappears.

The translators have had a difficult task in dealing with terms of which the English equivalents were often doubtful, but there are a few avoidable errors. On p. 142, the sentence beginning, "In this case the design of the sutures . . . ," conveys a meaning the opposite of the French, and three pages later, dealing with the lens shagreen, the translators use "spherules" for "éléments," thereby losing the nuance of vagueness which is desirable, since these objects are really only appearances. "Markings" would perhaps convey the author's meaning better. These little defects scarcely detract from the usefulness of the English edition, which is on the whole a faithful rendering, and has in one or two particulars improved on the original. The points of the lamp on p. 16, for instance, are brought out much more clearly than in the figure on p. 24 of the French edition, which it replaces. The description of Fincham's apparatus brings the first chapter of the English edition fully up to date.

MORE THINGS THAT MATTER.

By Lord RIDDELL. London: Hodder and Stoughton, Ltd. 1925. Pp. 318. 7*s*. 6*d*.

THIS volume is made up of articles which appeared originally during 1922–24 in *John O'London's Weekly*, and which are now republished in response to requests from readers who have desired their issue in more permanent form. The book is uniform with a previous volume, "Some Things that Matter," whose witty common sense over a wide range of subjects was pointed out in our columns upon its appearance.

None of the chapters in the new volume has any strictly medical bearing, save perhaps two which make up a tolerant discussion of that controversial subject, alcohol. Considering it now as a poison and now as the reverse, Lord Riddell's attitude is almost startlingly fair. He writes as one whom teetotalism suits, "having been accustomed to it all my life," but, though fully aware of the evils and dangers that follow abuse, or even use by the suggestible subject, he is so unbiased as to ask at the conclusion of the first of these chapters the following question: "One thing is certain; a teetotal world would be a very critical one. Would this make for increased happiness? I wonder!" The second of the chapters notes that the temperance movement in this country, as in the United States, has been a necessity arising out of social exigencies created some hundred years ago, when to abstain from intoxicants was almost a social slur. In this little discourse misconceptions regarding prohibition in America are set right, particularly the notion that the legislation was hasty or panicky; while it is still on trial the author, like a sound lawyer, comes to no decision on insufficient evidence as to whether its great object—namely, the increased efficiency of workmen—has been obtained. But he brings to notice the fact which too often escapes attention, that we in this country have for some years been engaged in considerable experiments towards, at any rate, the profound moderation of alcoholic habits. The figures that he quotes are, in his own words, imposing and gratifying:—"the production of beer and spirits has fallen nearly 50 per cent. in ten years, and the proceeds of taxation have risen from £33,000,000 in 1910 to £155,000,000 in 1923. Delirium tremens has practically disappeared, and the death-rate from alcoholism has been largely reduced."

A similar knowledge of detail and fairness of judgment is exhibited by the author through some 40 small chapters, all illustrating pregnant questions and supplying clear-cut and pithy reflections in answer.

JOURNALS.

THE JOURNAL OF PHYSIOLOGY. Vol. LX., Nos. 1 and 2. 1925.—The Influence of O_2-tension in the Inspired Air upon the O_2-tension in the Tissues, by J. Argyll Campbell. It is still generally believed that the O_2-tension in the tissues is nil. The previous researches of the author on the injection of gas under the skin and into the abdominal cavity of rabbits and cats showed that the normal O_2-tension under the skin is about 20–30 mm. Hg, and in the abdominal cavity about 30–40 mm. Hg. These tensions may be regarded as the tensions present in the fluids which exist immediately outside, and bathe the cells of the subcutaneous tissue and the cells of the peritoneum of the abdominal cavity Decrease of O_2-tension in the air breathed markedly decreases the O_2-tension in the tissues. Increase of O_2-tension in the air breathed markedly increases the CO_2-tension in the tissues, probably because the increase of O_2-tension in the blood decreases the rate at which

CO_2 is removed from the tissues; perhaps the respiratory centre is also concerned.—The Direct Action of Insulin on Fat Metabolism, by H. S. Raper and E. C. Smith. The possibility that insulin might, in addition to its influence on carbohydrate metabolism, exert a direct action on fat metabolism is suggested by the fact of the immediate reduction of lipæmia and acetonuria in the diabetic on administration of insulin. Direct evidence of the actual synthesis of fat under the action of insulin has never been obtained. The views on the subject are conflicting. The authors used mice, as their small size permits of an estimation of the total fat in the body, and they found that in decapitate eviscerate animals, with constant infusion of glucose, no change in the fat-content of muscle occurred under the action of insulin. The evidence obtained does not support the view that fat synthesis in the liver is associated with insulin hypoglycæmia.—The Effect of Pituitrin on the Fatty Acid of the Liver, by R. Coope and E. N. Chamberlain. It was found that injection of extract of posterior lobe of the pituitary body in rabbits and rats is followed by a well-marked increase in the amount of fatty acid in the liver.—Insulin and the Pituitrin "Fat Liver," by R. Coope. The pituitrin effect described in the previous paper—fatty infiltration of the liver—is not accompanied by damage to the liver cell, nor do the injections cause hyperglycæmia or glycosuria. A single dose of insulin given simultaneously with pituitrin profoundly modifies, and, in many cases, completely prevents the pituitrin effect on the liver-fat—evidence of an antagonism, probably of significance in the normal animal.—The Mechanism of Pancreatic Digestion—the Function of Secretin, by J. Mellanby. A secretion of pancreatic juice may be evoked by appropriate stimulation of the vagus only. Vagal juice is generally scanty in quantity, but rich in proteins and enzymes; secretin juice is copious in quantity, but relatively poor in protein and enzymes. The author determined the quantitative composition of this juice under a variety of conditions. The hypothesis is put forward that the enzyme content of pancreatic juice is determined by the vagus nerves, whereas the quantity of bicarbonate solution in which these enzymes are contained is determined by secretin. On this hypothesis secretin may play a subsidiary part in pancreatic digestion, since it only ensures the presence in the intestine of an optimal reaction for the activity of the pancreatic enzymes.—The Influence of the Spleen in Carbon Monoxide Poisoning, by J. Barcroft, C. D. Murray, D. Orahovats, J. Sands, and R. Weiss. In an atmosphere which receives a continuous accession of coal-gas it was found that guinea-pigs from which the spleens have been removed die sooner than either normal guinea-pigs, those from which omentum has been removed, or those from which one horn of the uterus has been excised. Having regard to the fact that in fatal pressure of carbon monoxide the spleen contracts, expelling its contents into the blood, it is suggested that the longer life of the normal animals is due to this accession of hæmoglobin into the blood. The percentage saturation of the blood with CO is almost the same in all the categories of animals.—The Relation in Diuresis between Volume of Urine and Concentration of a Diuretic with the Influence of Temperature upon It, by E. J. Conway. The experiments were made on rabbits under urethane narcosis; the urine was collected from a bladder cannula, and the necessary injections given through the jugular vein. In an animal which has received a large injection of glucose it was found that the rate of flow of urine and the concentration of glucose are related to one another by a formula which is given by the author. A similar formula is found to apply to the concentration of chloride and the rate of flow in saline diuresis. The effect of body temperature on the constants in these formulæ is to cause an increase of 10 per cent. per degree. A similar increase is found with urea.—The other papers are: On the Effects of Different Salts on the Heat-production in Muscle, by E. Sereni. Hæmochromogen and the Relation of Protein to the Properties of the Hæmoglobin Molecule, by M. L. Anson and A. E. Mirsky. The Maximum Work of the Several Muscles of the Forearm, by J. H. O. Reijs, and a Closed Circuit Heart Lung Preparation, by I. de Burgh Daly, to show the effects of alterations in blood volume. An increase in the volume of circulating blood produces, with the exception of minor differences, the same effect as an increase of venous inflow in the open circuit heart lung preparation.

BRITISH JOURNAL OF CHILDREN'S DISEASES. Vol. XXII. July–September.—In his paper on Scarlet Fever, with Special Reference to Susceptibility as Determined by the Dick Intracutaneous Test, which forms his M.D. thesis for the Queen's University, Belfast, Dr. W. A. Brown records his observations on 487 cases of the common infectious diseases—namely, scarlet fever, diphtheria, whooping-cough, measles, rubella, and varicella, on which he performed the Dick test. His principal conclusions are as follows: (1) The Dick test is an index of susceptibility and immunity to scarlet fever. (2) It is a valuable aid to diagnosis. A *strongly* positive reaction in the first 48 hours of a scarlatiniform eruption should make one hesitate before forming a diagnosis of scarlet fever. (3) When a patient who has recently shown a positive Dick reaction develops a scarlatiniform attack the reappearance of the red area at the site of the original inoculation confirms the diagnosis of scarlet fever. (4) Age-susceptibility for scarlet fever is highest at the pre-school age, whereas age-incidence is greatest during the first few years of school life. Immunisation, therefore, if adopted as a prophylactic measure in State medicine, should be carried out in the first few years of life. (5) The Dick test confirms the well-recognised fact that an attack of diphtheria increases the patient's susceptibility to scarlet fever. (6) The use of different dilutions of toxin may show widely divergent results. The use of a 1 in 6000 dilution seems to underestimate the susceptibility, while the use of a 1 in 1000 dilution tends to overstate the incidence.—Dr. Vincent Coates contributes a paper on Lipodystrophia, in which he records two personal cases in boys aged 7½ and 7¾ years, with notes on all the previously reported cases arranged in tabular form. He points out that the cause of this curious condition is entirely obscure. With the exception of a case reported by Napoleon Boston no claim has been made of cure or arrest of lipodystrophia.—Dr. Norah H. Schuster records a case of cerebral degeneration in an infant, in which the symptoms closely resembled those of a case reported by Paterson and Carmichael in 1924, owing to the onset of anorexia, amentia, and muscular weakness at an early age, a rapidly fatal issue and amaurosis. Pathologically the essential lesion was the same in all three cases—namely, a degeneration chiefly localised in the basal ganglia, combined with excessive production of blood-vessels and neuroglia. Wilson's disease could be excluded, as there was no cirrhosis of the liver. Dr. Schuster attributes the condition to a toxæmia of unknown origin, with no evidence of bacterial infection.—Dr. W. M. Feldman reports two cases of Occlusion of Bile-Ducts in Infants, whose ages were 8 weeks and 10 weeks respectively. He maintains that if surgical measures were adopted immediately the jaundice manifests itself they might be successful.—Dr. Angelica Panayotatou, of Alexandria, records a case of Ascaridiasis with Benign Jaundice in a boy of 8 years. The ova of *Ascaris lumbricoides* were found in the stools, and under treatment by santonin and calomel pills, followed by castor oil the next morning ten round worms were passed, and rapid recovery took place. The writer urges that in Eastern countries, especially those in which intestinal parasites are so frequent, the possibility of their presence should be considered in all illnesses of the intestinal canal. — The abstracts from current literature are devoted to ophthalmology.

Reports and Analytical Records.

(1) CHOCOLATE "IODOSTARIN"; (2) ALLONAL.

(Hoffmann-La Roche Chemical Works, Ltd., 7–8, Idol-lane, E.C. 3.)

(1) Chocolate Iodostarin is a preparation for the administration of iodine in the prophylaxis of goitre. The chocolate tablets in which the drug is contained are sold in boxes of 50 which, on experience gained in Switzerland and the United States, appears to be a sufficient quantity for prophylactic employment in the case of a child or young person for a period of six months. Each tablet contains the equivalent of 5 mg. of iodine, and it is necessary to note the distinction between this preparation and ordinary iodine tablets which are employed in syphilitic affections.

(2) Allonal was reported upon in The Lancet early last year. The full name of this preparation showing its composition is allyl-isopropyl-barbituric acid with phenyl-dimethyl-amino-pyrazolon. It is an hypnotic and analgesic which can be employed in substitution for morphine as it seems to have no habit-forming propensities. Numerous clinical reports have been published in the American medical press but the drug is still new to the English market, for which reason it may be serviceable to recall its characteristics. American experience goes to support the claims of the manufacturers that it is a remedy of real value for controlling insomnia and pain. As the preparation contains a derivative of barbituric acid it comes within the scope of the Poisons Schedule and is only supplied to registered practitioners and pharmacists. Recent evidence has been sent to us of the particular value of Allonal in certain cases as an hypnotic, for American physicians have put it to practical use in the breaking of drug addictions such as morphinism and alcoholism, although they allow that it is too early to speak dogmatically. Certainly further experience here would be worth recording, and there seems to be an opening for some extended inquiry under controlled circumstances.

(1) DIBROMIN; (2) SILVER NITRATE SOLUTION CAPSULES; (3) STORAXOL; (4) OLGAR.

(Parke, Davis and Co., Beak-street, London, W. 1, and Detroit, Michigan, U.S.A.)

(1) Dibromin is a crystalline synthetic compound containing approximately 56 per cent. of bromine in loose combination. When its solutions are brought into contact with infected tissues the bromine is slowly liberated and exerts a powerful germicidal action. It is stable in the dry state and solutions are easily made of definite strength; these do not stain or irritate and are practically non-toxic. Dilute aqueous solutions, ranging in strength from 1 in 10,000 to 1 in 2500, may be applied by continuous irrigation in the treatment of extensive wounds or ulcerations, and for infections of the urethra, bladder, or uterus. Weak solutions are suitable for use as mouth washes and as collyria in eye infections. The preparation is supplied in 6 gr. capsules (in bottles of 10 or 50 capsules) for convenience in making solutions without weighing—the contents of one capsule added to 7 pints of water forms a 1 in 10,000 solution.

(2) Silver nitrate solution capsules provide in aseptic condition the 1 per cent. solution of nitrate of silver for application to the eyes of infants at birth. They are formed of a special wax, and each contains about 5 ♏ of the solution, which is easily expelled by pressing the capsule between thumb and finger after an aperture has been made with a sterile needle. Two of these capsules are supplied in a tin together with a puncturing needle and directions for use.

(3) Storaxol is a combination of storax, resorcin, menthol, camphor, carbolic acid (5 per cent.), and precipitated sulphur in an emollient base. As the ointment is penetrative it forms a good parasiticide. Its antipruritic, antiseptic, and analgesic properties indicate its use in chronic eczema, ringworm, pruritus, urticaria, impetigo, psoriasis, scabies, and parasitic affections of the scalp. It can be employed as a serviceable dressing for foul ulcers and in the itching of piles. It is supplied in convenient collapsible tubes, also in jars containing 1, 5, or 10 pounds.

(4) Olgar consists of highly purified liquid paraffin emulsified with agar. It has the appearance and consistence of thick cream and is agreeably flavoured. The paraffin is rigorously tested to ensure freedom from injurious by-products. The administration of Olgar is indicated in cases of chronic fæcal stasis and the various forms of auto-toxæmia resulting therefrom; in catarrhal conditions of the intestine and hæmorrhoids. Its lubricating and therefore soothing action is purely mechanical; it softens the intestinal contents and facilitates peristalsis. The dose for an adult is one tablespoonful night and morning. It is supplied in 16-ounce bottles.

LACTOBYL.

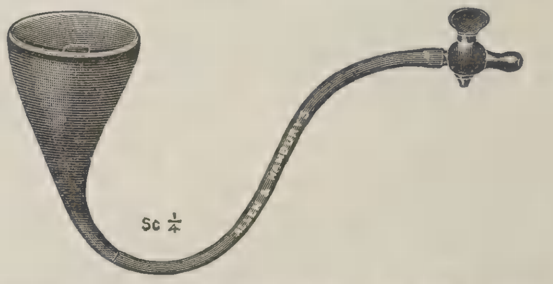
(J. Legrand, 21, Rue Theodore-de-Banville, Paris, 17e; and The Continental Laboratories, Ltd., 22d, Ebury-street, S.W. 1.)

This preparation is a combination of agar, biliary extract, extract of the intestinal glands, and lactic ferments, and is designed to regulate the biliary and intestinal secretions, replacing the habitual use of purgatives. A physiological theory, set out by the literature, which meets the ætiology of every case of chronic constipation, would have some difficulty of establishment, but the value of agar on intestinal residues is well known, while promotion of a flow of bile is the object of all preparations similar to lactobyl, and there is evidence that that object is achieved. It is supplied in tablets in which the dosage is calculated so that one to six tablets can be taken without causing any colic. The treatment should be commenced with one or two tablets, the dose being increased or diminished according to the results.

New Inventions.

MODIFICATION OF DE RIBES'S BAG.

The illustration shows a modification of De Ribes's bag which I have suggested. By a special device the broad end of the bag, when filled, is concave, so that it does not displace the fœtal head. The pressure also is evenly distributed outwards against the inner side of the cervix, thus producing more speedy dilatation. The object of this, like any other form of De Ribes's bag, is to play the part of the membranes in those cases where the membranes rupture early in labour. The bag, when folded, can be introduced into the uterus when the cervix is the size of a shilling by means of long ovum forceps. It is pear-shaped, $2\frac{1}{4}$ in. in diameter at the broad end, and 4 in. long, and it is made of rubber of medium thickness. When the bag has been introduced a Higginson's syringe is fitted to the tap and the bag partially filled with water. The bag remains in position until the cervix is fully dilated.



The bag can be obtained from Messrs. Allen and Hanburys, Ltd., 48, Wigmore-street, W.

J. E. Hepper, M.R.C.S. Eng., L.R.C.P. Lond.,
Late Major, R.A.M.C.

THE LANCET.

LONDON: SATURDAY, OCTOBER 3, 1925.

YESTERDAY, TO-DAY, AND TO-MORROW.

We publish to-day three of the introductory addresses delivered this week at the opening of the winter session of the Metropolitan medical schools, when Prof. E. A. Gardner introduced his audience at Westminster Hospital to the very beginnings of medical art in ancient Greece, while Major J. H. Beith spoke to the students at Guy's Hospital on the necessity of cultivating in professional life sympathy with the personal attributes of the sick subject. Major Beith, it will be seen, draws his humorous and pointed illustrations from the working of a Rolls-Royce car, while Prof. Gardner lays stress on the influence of the mind over the body as evidenced in the days when not to believe in magical manifestations would have been a confession of ignorance, and the two addresses between them illustrate the practice of medicine as carried on in conformity with accepted knowledge throughout a period of over 2000 years, during which time we cannot fail to see that human nature has remained much the same thing, and that the part played by medicine has shown a similar applicability to circumstances. The more intimate that the doctor's comprehension is of the patient's mental make-up, the more successful will be his choice and application of remedies for his physical ills. So it was in the yesterday of ancient Greece, so it is to-day in our hospital and private practice, and so it will be in any of those great developments of to-morrow, in which the progressive nature of our science and art warrants belief.

Prof. Gardner in his disquisition on the cures of Æsculapius surveys common ground upon which the students of archæology and medicine meet, and it is archæology which has revealed to medicine the sources of the wisdom of Hippocrates, the Father of our calling. The ancient Greek records, notably those at Epidaurus, though compiled apparently at one date, were based upon votive offerings received over a long series of years, and the traditional wisdom thus placed at the disposal of Hippocrates led to the compilation of the first great medical system. In this the practice of medicine was for the first time based upon the principles of inductive philosophy, and while the knowledge of anatomy, of physiology, and, therefore, of pathology was defective, the observations on the natural history of disease were masterly. He was evidently able to sift the wheat from the chaff in the votive offerings, as well as in the many contributions from all sorts of sources, authoritative and other, which must have gone to the compilation of the numerous treatises. The story was carried on, as all know, by the development of medicine in Greece, the rise of the Alexandrian school, and the teachings of Celsus and especially of Galen, and when after the dark ages the classical literature was brought to light, all that stood the proof of clinical trial remained as the structure upon which have been erected the immense developments of the scientific medicine of to-day. Here fundamental discoveries have worked veritable revolutions in conception as in practice, but the mind of man in relation to his body remains substantially unaltered. We are reminded by Prof. Gardner that Sir Clifford Allbutt estimated that in the Æsculapian centres by pomp, splendour, and enchantments the senses of the patients were captured and the springs of nervous energy unsealed. The same thing happens to-day; and while the mass display of the power of suggestion, that can be seen at Lourdes, is in many respects a return to the methods at Epidaurus as described by Prof. Gardner, the need for estimating the relations between the physical and mental qualities of the patient is to-day recognised by every medical practitioner as of paramount importance. The eulogy of Sir Clifford Allbutt which Sir Arthur Keith gives in the third address which we publish suggests the ideal fusion of the man and the student which makes the physician. His plea for disciplined minds is appropriate, and a sense of proportion is stimulated by his statement that 20,000 years ago European man was as well equipped in size and form of brain as he is to-day.

Major Beith's address, though deliberately cast in a light and humorous mould, conveys a similar serious message—a message foreshadowed in its title, for his thesis is that, while no force or attractiveness of personality can compensate the doctor for ignorance, yet, unless the doctor's personality be sympathetic he will be deprived of an invaluable adjuvant to his labours. Major Beith's counsel to medical students that, if they want to get on in the world quickly, they must advertise, would have been dangerous in its implications if he had not immediately qualified his words by making hay of the methods employed in the specialised world of advertising, while his comments on the art of handling patients conceal real shrewdness under a humorous cloak. And his closing words, when applied to the responsibilities which lie upon the shoulders of the medical practitioner, will find general endorsement.

EXPERIMENTAL EPIDEMIOLOGY.

In pre-bacteriological days epidemics were things of themselves, with origins, structures, and natural histories characteristic of each variety in the same way that each kind of animal and plant has a specific anatomy and specific habits and relationships to the rest of the world. With the recognition of parasites, epidemics were, as it were, materialised into reactions between the host on the one hand and the bacillus or protozoon on the other; the "cause" of an epidemic of a disease became the parasite which was related to that disease. Writers like Hirsch and Creighton were looked on as curious out-of-date mystics, and Sir William Hamer's gentle raillery failed to convince as many bacteriologists as it should that they had no real explanation of the natural phenomena in their talk of cultures and immunity. Experience has shown, as it has so often done before, that the flood of the new knowledge of parasites did not of itself explain all that its devotees expected and by implication claimed, and as more accurate experience of the facts of epidemics has accumulated it has become clear that the older point of view really needed attention. That the older epidemiology is really discrepant with parasitology is unthinkable if it is assumed that parasites are a necessary factor in the causation of the diseases concerned; it is evident, however, that much more knowledge is required before the two lines of thought and explanation can be brought into harmony. Observation has its limits of usefulness in unravelling such problems; there is, indeed, little hope of success unless the questions can be dissected and simplified by experiment. The recent progress of experimental epidemiology, associated chiefly with the work of Prof. W. W. C. Topley in this country and of Dr. L. T. Webster in America, is, therefore, to be heartily welcomed and their work deserves close study. In the latest instalment[1] of the Manchester work the careful experiments made by Prof. Topley are analysed and discussed by Dr. M. Greenwood as if they were the returns of a medical officer of health, and their joint paper makes an exceptionally readable and interesting document. The particular infection examined is the pasteurellosis of the mouse, and the particular problem here dealt with is the effect of adding normal animals to an infected population. It had previously been shown that if an epidemic is started in a mouse community it spreads through it and then dies away, leaving a certain number of survivors, and that if at this stage a number of normal animals are added to the community the epidemic blazes up again and involves not only the fresh mice but also the survivors of the first outbreak. In the present experiments fresh normal animals were added at various intervals of a few days, and in this way an epidemic was maintained for more than three years. The mortality was not regular but in waves, usually of a length of about three weeks, though sometimes three times as long, and the course of the mortality varied with the number of fresh mice coming into the population and the rate at which they came in. The outstanding fact, as the authors point out, is the encouragement of an epidemic in a community by the immigration of non-infected individuals. It has generally been assumed that the admission of normal animals to an infected herd is not dangerous to that herd (though it is, of course, dangerous to the normals coming in). This is shown to be unsound. The explanation remains to be worked out. At present one can assume only that in the decline of an epidemic some sort of balance is reached between the parasites and the hosts such that the parasites can do no further harm unless they can get into some normal non-immune individuals in whom they can breed up a race which is capable of attacking the resistant residue of the epidemics. These are questions at the very fundamentals of epidemiology, and we may look to the experimental method to help substantially towards their solution. Meanwhile we may reflect on the wisdom of the ancients who knew that the best thing to do with an epidemic was to shut it up and have nothing to do with it. We now know that they were thinking of others as well as of themselves.

SCARLATINAL OTITIS.

Mr. T. B. Layton's report[2] to the Metropolitan Asylums Board on ear disease in scarlet fever is a continuation of that sent in by him in July, 1921, as a result of one year's work, and the present report deals with the 13 months from September, 1923, to September, 1924, inclusive. In that period 290 scarlet fever patients suffered from suppurative disease of the middle ear, a percentage of 8·61; the incidence in scarlet fever of simple type was 7·13, and in septic scarlet fever 24 per cent.; the statistical tables also show that otitis is more frequent, and recovers less rapidly, in the first quinquennium than at a later age. Mr. Layton refrains from giving an opinion as to the potential infectivity of the ear discharge, and refers to the awkward position which might occur if a mastoid operation were advised at a fever hospital, because the discharge is a danger to others, rather than for the welfare of the patient. The conclusions at which he arrives in regard to treatment are not always in accordance with the practice accepted in general otological work; but it must be remembered that the management of scarlatinal otitis, especially in institutional treatment, differs from that of otorrhœa in general practice.

Paracentesis of the drum was only performed 26 times out of a total of 379 ears in which discharge occurred; this low figure is partly due to the absence of symptoms, for pain is far less frequent than in ordinary otitis, and routine inspection of the ears in the absence of symptoms is hardly practicable in large institutions; but chiefly is it due to the short period that elapses between bulging and rupture. In fact, the difficulty is to ensure the operation being carried out in time under the conditions which regulate its performance in the Board's infectious hospitals, the time necessary to obtain the consent of the parent being, in many cases, responsible for the delay. This is an administrative difficulty which would not occur in private practice and might perhaps be obviated by an alteration in the regulations; in any case, it does not detract from the value of the operation, when it can be performed, a value of which Mr. Layton is firmly convinced, though this is the one point on which his Board do not agree with him. A remarkable point is Mr. Layton's tribute to the value of Wilde's incision; this operation was performed 16 times; eight cases left the hospitals without any further operative treatment and with dry ears. Of these Mr. Layton says that "under any other plan all these children would have been submitted to the complete mastoid operation"; this remark is inaccurate, as by the "complete" is usually meant the "radical" mastoid operation, but presumably he means antrotomy, and his statement that "they would not have shown a better result" is justified. Of these eight cases one was aged 6 and one aged 5; none of the others was over 3 years old. But the other eight cases, of whom five were under 4 years of age, were later submitted to a mastoid operation; of these, one died from septicæmia and two left hospital with active disease still present. This result must be considered good; if 50 per cent. of acute otitis with retro-auricular swelling in young children can be got well with Wilde's incision, it is possible that as good results might be obtained in non-scarlatinal cases, at any rate under the age of 4 years. Surprisingly poor results are shown by antrotomy performed for ear discharge only; of six cases the first alone was a complete success; the second, operated on two months after onset, remained with a moist perforation; and the third, operated on after three months, with a discharging ear; the other three are catalogued as failures, but the date of operation is not mentioned. This is in marked contrast to the results obtained in ordinary otological practice, where operation after two or three weeks is usually successful; the date of operation is only given in these two cases, but it is possible that better results would have been obtained if they had been operated on sooner. Mr. Layton's opinion is that those cases do badly which show no signs of disease in the mastoid at operation, that it is impossible to distinguish by ordinary examination which cases have disease in the mastoid, and that an X ray examination is likely to be helpful in this respect. Accordingly he has recommended to the Board that an X ray apparatus be installed at one of the fever hospitals for examination of the mastoids of these cases, and this the Board has agreed to do at the North-Eastern Hospital.

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[1] Journal of Hygiene, 1925, xxv., 45.

[2] M.A.B. Annual Report. 1924–25. Pp. 187–217.

An important problem is presented by the cases discharged with active otorrhœa; there were 35 of these, of whom 17 had discharge before contracting scarlet fever. Of the remaining 18 cases, 11 had either septic scarlet fever or a mixed infection, leaving seven only of the ordinary type of scarlet fever. Surely no better tribute to the excellence of the management of these three hospitals could be desired than that only seven cases contracted an uncured scarlatinal otitis in the 13 months under review. But it is naturally desired to reduce the number still further; recognising that scarlet fever leaves the patient with a resistance profoundly lowered to the ordinary organisms of suppuration, Mr. LAYTON believes that heliotherapy should be employed, and the Board has adopted his suggestion, and proposes to set apart a ward of 12 to 20 beds for experimental sunlight treatment with an ultra-violet apparatus for use on dull days and during the winter months. Needless to say, the result of the treatment of pyogenic infections, in cases of lowered resistance, by this method will be watched by those interested in many different departments of medicine and surgery.

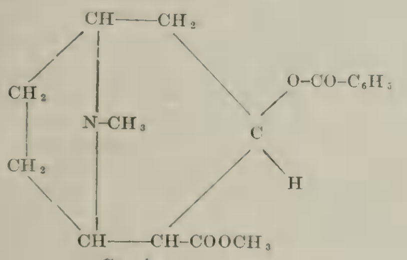
Annotations.

"Ne quid nimis."

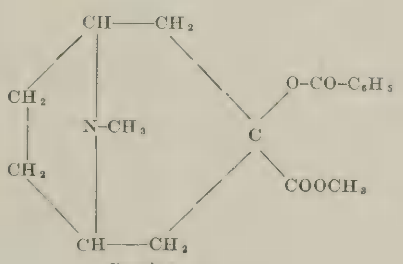
LOCAL ANÆSTHETICS AND CHEMICAL CONSTITUTION.

LOCAL anæsthetic substances have hitherto usually been employed in the form of hydrochlorides which have a definite acid reaction and are largely ionised in solution. Such solutions are fairly satisfactory in producing local anæsthesia when injected, particularly in conjunction with adrenalin, but they have little surface anæsthetic action, and on this account have not proved satisfactory substitutes for cocaine in ophthalmic surgery. For this surface action the free base appears to be far superior to the ion, and substances which undergo hydrolytic dissociation are greatly to be preferred to those undergoing electrolytic dissociation. Salts formed by combination of the base with weak acids when dissolved in water undergo very little ionic dissociation and much hydrolytic dissociation, and hence show the strong surface anæsthetic action of the base itself. At the time of the Bath meeting of the British Medical Association Dr. A. J. Copeland communicated[1] the results of experiments and tests, made by him as Ernest Hart Memorial Scholar, with the borates of these local anæsthetic bases. The work, which was carried out in conjunction with Mr. H. E. F. Notton, B.Sc., at the laboratories of pharmacology and chemistry of the University of Cambridge, is now set out at length in the *British Medical Journal* for Sept. 26th. The borates show the desired surface action in a high degree, and the local anæsthetic action of a large number of them has been measured on the cornea of the rabbit. In this way several of these borates were found to have a surface anæsthetic action equal to, and in some cases greater than, that of cocaine hydrochloride. Owing to the satisfactory results obtained with the borate of "ethocaine" (of which novocaine is the hydrochloride), special attention was paid to this substance. Not only has it a stronger surface anæsthetic action than most of the borates tested, but it also has the advantage of greater stability. It acts rapidly, both as a surface and a hypodermic anæsthetic, its surface action being more powerful than that of cocaine hydrochloride in solutions of equivalent concentration. It is practically free from any toxic action, and is non-irritant. Its solutions keep well and do not precipitate in contact with the tissues and body fluids. It is, as would be expected from the salt of a moderately strong base with a very weak acid, slightly alkaline in solution, the alkalinity of the solutions of the strength used being equivalent to pH 8. This substance, ethocaine borate, is now manufactured by the British Drug Houses, Ltd., and is available for clinical use under the name "borocaine." For convenience it is supplied in tablets together with a small quantity of adrenalin and sufficient sodium chloride and pure glucose to make an isotonic solution when dissolved in the prescribed quantity of sterile water to make a 2 per cent. solution, this being the usual strength for producing surface anæsthesia. Of the other borates that of β-eucaine is the most noteworthy, as it has the highest surface anæsthetic power of all. Further information concerning this interesting and possibly very valuable substance will be welcomed.

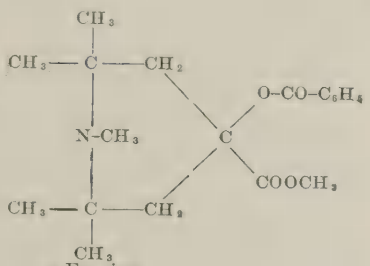
The local anæsthetics form a very interesting group from the point of view of the relation between chemical constitution and physiological action. Although the first substance to be widely used as a substitute for cocaine itself, α-eucaine has a structure somewhat resembling that of cocaine, it was soon replaced by β-eucaine, which has a structure less like that of cocaine, and subsequent developments were concerned entirely with substances, such as anæsthesine, novocaine, butyn, stovaine, tutocaine, &c., which have very little resemblance at all to cocaine from the standpoint of chemical structure. It is very curious in this connexion to note that α-cocaine resembles cocaine itself in structure far more closely than does α-eucaine, but differs from these in being quite devoid of local anæsthetic action. The more recent local anæsthetics of the ethanol, propanol, and butanol series, such as novocaine, butyn, and tutocaine, are of simpler chemical structure than cocaine, though closely related to one another, as can be seen from the structural formulæ of many of these compounds given by Mr. E. Watson-Williams in a recent account[2] of the pharmacology of tutocaine.



Cocaine.



α-Cocaine.



α-Eucaine.

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[1] THE LANCET, 1925, ii., 196.

[2] THE LANCET, 1925, i., 914.

EMBRYONIC DIFFERENTIATION.

THE old doctrine of preformation held that the organism was present in the germ-cell, only requiring growth and slight alteration of its parts to attain to its proper state. When it became evident that, to account for successive generations, this belief entailed the assumption that these miniature forms were contained within one another ad infinitum like Chinese boxes, the doctrine naturally fell into disfavour. It was succeeded by Wolff's theory of epigenesis, which postulated a real development or evolution from unformed matter; in its essentials correct, as a description of what takes place, founded on observed facts, but not, of course, an explanation of development. To-day we hold, in some sense, the two conceptions. We know enough of the detail of formation of an organism to recognise its epigenetic development, and at the same time we are driven to admit a more subtle form of preformation in the shape of predetermination; the organism is not there in an excessively minute but practically perfect shape, but potentially, in a form which can only reach its specific end by the long succession of epigenetic stages through which it will pass. These are basic ideas which have been and are being consolidated, while the battle has gone ahead into other regions, and concerns itself with things which were not within the horizon of the older fighters.

Embryonic development, however, is not only the expression of a prefixed potentiality showing through a series of morphological changes, but is also under the influence of interactions between these and the environment. Experiment can give us some apparently simple examples of the play of these forces. In some of the lower forms the outgrowing optic vesicle has been transplanted under the ectoderm of another part of the body, with the result that a lens has been formed in this new situation from the outer layer; evidently the power of lens formation is not a specific possession of the ordinary lens area of the ectoderm, and the power is called into action by the contiguity of the optic vesicle—i.e., by the environment. On the other hand, the optic vesicle deprived of its lens covering still invaginates to form the optic cup, thus showing that this power is inherent in it, and does not depend on the presence of the lens which, normally, occupies the hollow of the cup. Other examples of the effect of environment in the wider sense are to be seen in the well-known experiments in which the results on developing eggs of the addition of, e.g., certain salts to the surrounding media have been recorded. There is evidently predetermination, but there is also evidently in some cases a wide potentiality of development. Experiments on some of the lower animal forms have shown equipotentiality for the earlier stages of embryonic development, but other forms demonstrate, as certainly, early predetermination of parts, and in some cases, as in Driesch's experiments on the blastula of the sea-urchin, it would seem to be suggested that the localisation of special powers in one part means its removal from the rest. The cells of this blastula are at first equipotential, but, as soon as those at one pole have budded off the mesenchyme cells, they alone have the power to form the gut invagination; they cannot reform into a blastula, and the remaining cells, though they can reform into a blastula, cannot invaginate to make the gut-cavity. There has been, evidently, a rearrangement of the substances within the cells forming the blastula, and specialisation has replaced apparent non-specialisation. When such cases are considered, it is not surprising that two seemingly opposed views should be held about the nature of the developing organism. One maintains that this is fundamentally equipotential in all its parts, depending on the formative stimuli of circumstances for the result, as in the case of the lens rudiment mentioned above; the other postulates a mosaic-like arrangement of organ rudiments present from the beginning in the ovum and undergoing expansion and evolution in the processes of further development, such, indeed, having been shown to exist in certain eggs. It seems not impossible that the future will reconcile these two views and establish a via media for general purposes.

In the meantime evidence accumulates on one or other side, and among the latest contributions to the question in England is the short but very interesting account by Dr. P. D. F. Murray and Dr. J. S. Huxley, of Oxford,[1] of the self-differentiation in an experimental graft. A small basal piece of the posterior limb-bud from a four-day chick was grafted on to the chorioallantoic membrane of a seven-day incubated egg. It was removed and examined after five days. It showed a normal and well-formed femur, ossifying, with a cartilaginous patella and a small piece of pelvic cartilage, and no sign whatever of any attempt to form the distal portion of the limb. This, as the authors point out, is against the conception of equipotentiality of the tissues of the four-day limb-bud, although its structure at that time is microscopically undifferentiated. There is reason to suppose there has been regeneration of the femur in part, so that the authors suggest that it is the region that is predetermined. It would seem to follow that, within the area of the "regional mosaic," there is some amount of pluripotentiality present in the bud. In a postscript Dr. Murray and Dr. Huxley refer to more recent work by P. Weiss, who has shown that, in the newt, each segment of the limb-skeleton is totipotential as regards its own regulation, but the limb-skeleton as a whole is a mosaic of regions with different potentialities. The contribution gives a good mental picture of the uncovering of potentialities one after the other, and foreshadows a time when two conflicting views will be found to harmonise.

EXTENDED SPA TREATMENT.

IT is only by studying the figures showing the total invalidity for which insurance benefit under the National Health Insurance Act is paid that the prevalence of rheumatism amongst insured persons is really appreciated. The Special Committee investigating the incidence of rheumatism, whose report (No. 23) was published in March, 1924, found that nearly one-sixth of the total benefit paid was due to diseases classed as "rheumatic," the actual cost in 1922 being estimated at £1,000,000. Of these cases half were due to various forms of chronic arthritis. It is no wonder that the approved societies pressed for a special inquiry into the causation of rheumatism amongst the insured workers. In certain occupations the crippling forms of arthritis are more prevalent, but even there the insistence on and facilities for personal hygiene have led to some measure of control. The ætiology of these conditions will not be understood until the nature of the infection is determined, but the recent investigation clearly showed a close association with a septic focus which in so many cases is only too obvious. The proper care of the teeth and the thorough provision of dental benefit should have a great effect in reducing the incidence of these diseases, and the provision of the services of a bacteriologist and a laboratory accessible to insured persons will be a further step in the same direction. Recently the demand for spa treatment for insured persons has grown in volume, as at present it is only through charitable help that such persons can be sent to any of the treatment centres. Unfortunately, however, if assistance could be given to all the suitable cases it is certain that the present available accommodation would be quite inadequate. The special hospitals at Bath, Buxton, and Harrogate can only deal with 5000 patients each year, while statistics show that something like 370,000 insured persons seek advice for some form or other of "rheumatics" annually. Dr. Matthew B. Ray, the secretary to the British Subcommittee on Rheumatism (International Society of Medical Hydrology), has suggested that much of the treatment might be given in the workers' homes; it is not easy to instal vapour baths in an artisan's cottage, yet there is no reason why a special department should not be installed in the municipal baths. Turkish baths are, in fact, provided by certain local authorities. Sir George Newman, in his report for the year 1924, has given an admirable summary of the case for the immediate provision of treatment centres. He points out that at the present time these cases, which are not admitted into general hospitals because of their chronic nature, arrive eventually in the Poor-law infirmaries, where facilities for investigation and treatment are not adequately provided. The work of research and investigation should be undertaken at a much earlier stage in the disease, and this is only possible if cases are admitted to specially equipped institutions as soon as they are incapacitated. "Essential for research," writes Sir George Newman, "is an institution where enough cases can be concentrated in conditions to make it possible to employ a team of medical officers, where treatment and observation are systematised and represent continuous investigation." This is a great ideal, both for the medical profession and the country, an ideal which, in view of the issue at stake, should become a practical creed.

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[1] Journal of Anatomy, July, 1925.

PROTEIN SHOCK THERAPY FOR FIBROSITIS.

A FEW years ago Dr. W. Ponndorf, of the Inoculation Institute of Weimar, set forth the claims of cutaneous inoculation of vaccines by scarification in the treatment of the "mixed infections" of tuberculosis, under which term he included almost every infectious disease to which man is prone. He prepared two vaccines: "A," which was used for pure tuberculosis, consisted of concentrated Koch's Old Tuberculin with the addition of an empirically determined amount of human and bovine autolysed tubercle bacilli; "B," for the mixed infections, was similar to "A," plus the endotoxins of streptococci, staphylococci, pneumococci, and influenza bacilli. Inspired by the effect which Ponndorf's vaccines seemed to have on rheumatic conditions, Dr. Gustav Paul, director of the State Inoculation Institute of Vienna, began some four years ago to test the clinical value of that method of treatment, and in a recent issue of the *Wiener Klinische Wochenschrift* (Sept. 3rd, p. 984) he records his results in nearly 600 cases of rheumatism where he administered vaccine by scarification.

The ætiology and history of Dr. Paul's enthusiasm for the treatment is not without interest. The story, as he himself tells it, is as follows. Although he had been familiar with Ponndorf's theories for many years, he had never tested them in practice owing to lack of suitable material. As a result of a visit to Weimar in 1921, however, he was so impressed with the possibilities of Ponndorf's claims that he obtained facilities to carry out this method of inoculation in the sanatorium for children suffering from surgical tuberculosis in Grimmstein, Lower Austria. In addition to over 300 cases of tuberculosis of the bones and glands in children, in which the treatment proved satisfactory, Dr. Paul was able to observe what he terms the "amazing" (*verblüffend*) curative powers of the vaccine in some 50 adults, nurses, and officials of the sanatorium, who suffered from rheumatism. In 1923 the Grimmstein sanatorium was closed down, and as Dr. Paul had no private practice of his own wherewith to continue his observations, he feared that further investigation on his part might lapse. Fortune favoured him, however, and the successful treatment of a "lady of quality" in Austria formed the nucleus of a private clinic for ambulatory cases of rheumatism, which up to the present has furnished him with some 600 cases. Dr. Paul does not describe his technique in detail, but indicates that a small area of skin is scarified, without drawing blood, and then the vaccine is applied in a carefully regulated dosage, which depends on the size of the field of inoculation, the number of scarifications, and the amount of the vaccine. The superiority of his method over the more usual methods of protein shock he ascribes to: (1) the happy combination of toxin and bacterial protein; (2) the manner in which they are assimilated; and (3) the correct choice of absorption routes—which should be by the lymphatics. The first application of the vaccine serves to sensitise the patient, and the subsequent allergy and local reaction furnishes a valuable indication in estimating the amount of individual tolerance. The results Dr. Paul has obtained in his completed cases are reproduced in the following table:—

Condition.	Case-incidence.	Cured.	Considerably improved.	Unchanged	Worse.
Arthritis deformans . .	35	11	18	4	2
Chronic rheumatoid arthritis	147	95	48	3	1
Arthritis of shoulder-joint	35	27	7	1	—
Muscular rheumatism	26	19	6	1	—
Sciatica	44	34	9	1	—
Chronic lumbago . .	23	15	8	—	—
Neuralgias	32	19	9	4	—
Total	342	220	105	14	3

He has thus 65 per cent. of cures and 95 per cent. of improvements to record, and in a further series of 257 uncompleted cases improvement already reached 75 per cent. Dr. Paul points out that these high percentages are all the more noteworthy as the majority of cases classified as chronic rheumatoid arthritis represented transition stages towards arthritis deformans, and further, most of these patients had come to him as a last resort, having been previously treated unsuccessfully by every other known therapeutic agent. He attributes the failure of other methods, such as balneo-therapy, drug treatment, and radiation, to the over-energetic and heroic manner in which they are exhibited, quoting Prof. Bier's views on the over-sensitive state of the chronically inflamed tissues which require the smallest possible stimulus to promote the activity of the cell.

Dr. Paul's method, therefore, falls into the category of non-specific protein shock therapy, in which the touchstone is not "quale" but "quantum"; and he regards the effective substitution of some other antigen for Ponndorf's tuberculin as within the bounds of possibility, "for," as he says, "the medical world is somewhat tuberculin-weary." His claims are very large and in view of the official position he holds are hardly likely to pass unnoticed. They should certainly be tested by those who are dissatisfied with their own results in the big group of fibrositic maladies.

PROF. RICHET'S RETIREMENT.

THE retirement of Charles Richet from the chair of physiology in the Paris Faculty of Medicine, after 47 years of devoted teaching and brilliant research, recalls to mind the enormous strides made in his subject during the span of his professional life. Fifty years ago the renaissance of physiology was but just beginning and the young Richet was the pupil of such masters as Berthelot, Marey, Vulpian, and Claude Bernard. The field was ripe to the harvest, and Richet and his contemporaries piled discovery on discovery, and what to them were new facts wrung from Nature by hours of patient research are to us almost banal. The diuretic properties of sugar, for instance, the refractory period of the nervous system, the salt-free diet for epilepsy, the virtues of chloralose, the influence of anæsthesia on respiration—with all these points the name of Prof. Richet is associated, as well as first and foremost with the discovery of anaphylaxis. In his recent farewell address [1] to the Faculty, the aged professor reviewed the work of the physiological laboratory since 1881 with particular reference to five of his most significant lines of research.

The essential principles of temperature regulation were first explained by Prof. Richet in 1884, an almost accidental result of some experiments on electrically produced pyrexia in dogs. The rapid breathing of the dog in hot sunshine was called by him "polypnœa" in recognition of the fact that it was no laboured panting or "thermal dyspnœa" as older physiologists called it, but an evaporation process whereby the temperature of the animal's body was kept level in extremes of environmental heat, just as the human being is kept cool by evaporation of sweat from the naked surface. A muzzled dog, to whom this protection was forbidden, would die of heat in half an hour. Prof. Richet also demonstrated that two mechanisms regulate this thermal polypnœa, a reflex and a central. The reflex panting or sweating stimulated by simple contact with warm air prevents rise of temperature; when it is inhibited by an anæsthetic, such as chloral, the blood temperature may go as high as 108·5° F. before its heat stimulates the bulbar centres and panting or sweating is initiated centrally so that the temperature falls. The parallel mechanism of shivering to prevent loss of heat from the body was shown to require a temperature of 93° before the central stimulation occurred. The application of these physiological facts to the clinical phenomena of fever has revolutionised our attitude to temperature states. Perhaps most epoch-making of all the work emanating from the Paris laboratory was that on serotherapy, which began with some speculative remarks in a lecture delivered by Prof. Richet in 1883. Commenting on the comparative immunity to anthrax of Algerian sheep and the susceptibility of French breeds, he suggested that injection of Algerian blood might confer immunity on French animals. Some years later the well-known experiments on *Staphylococcus pyosepticus* were carried out, in collaboration with Prof. Héricourt, and in 1888 it was established that the blood of an immunised animal will confer immunity on one that was previously susceptible. Their further researches led them along a road of which the end is not yet in sight—the search for a satisfactory serum for tuberculosis. Their principle has been amply corroborated by contemporary and later workers, who followed the more promising lines of diphtheria and tetanus. A clinical offshoot of the tuberculosis experiments was the discovery of the virtue of raw meat-juice in this disease. Its value is admittedly restricted to early cases, but Prof. Richet claims that the administration of the correct quantities—somewhat large ones—is followed by a gain in weight and strength and an increase of azote and phosphoric acid in the urine. Genetics received a contribution from the researches of Richet and H. Cardot into lactic fermentation, out of which arose the discovery that micro-organisms cultivated in certain media acquire new characteristics and transmit them to their offspring. Anaphylaxis is one of the most unexpected of all physiological phenomena, and the original researches of Prof. Richet and Dr. Paul Portier into this subject arose from an unexpected and piquant direction. It was while accompanying one of the deep-sea expeditions of Prince Albert of Monaco that their experiments with poisonous actinia revealed this phenomenon. To their profound surprise dogs that had recovered from a sublethal dose succumbed in two minutes to a trifling second injection.

Prof. Richet's career is one of which his countrymen and fellow-workers may well feel proud. Like all great discoverers he confesses the debt he owes to happy chance, but he adds, as every worker knows to be true, that that good luck must be the benison of the gods on labour, on faith in science, on enthusiasm for research. It is because he has passionately loved physiology that he has rendered to it and to the world such fruitful service. He passes into retirement full of years and honour, and accompanied by the cordial good wishes of scientists and medical men in every part of the world.

THE MEASUREMENT OF ATMOSPHERIC DUST.

THE importance of atmospheric dust as a cause of respiratory disease has long been recognised. Certain forms, such as coal-dust, flour, and dust from grain elevators may be so finely divided as to become highly explosive in suitable concentration; whilst it has long been known that dust plays a part in the condensation of water from the atmosphere to form clouds and fog. These facts make it necessary to have some means of measuring dust, and many have been devised. The well-known method utilised by John Aitken [1] depends on the condensation of water vapour on the suspended particles, by which only the hygroscopic nuclei are taken into account and the rest are neglected. Another principle was brought into service in an instrument devised by Dr. J. S. Owens three or four years ago for the Advisory Committee on Atmospheric Pollution. The air to be examined is caused to impinge at high velocity upon a microscope cover-glass, the jet being ribbon-shaped and the velocity of impact approximately that of sound; the jet is formed by an air-pump of 50 c.cm. capacity, which serves thus to measure the volume, and the reduction in pressure brought about in the jet causes condensation of water upon such particles as have an affinity for it. With their load of water, these impinge upon the cover-glass wetting the point of impact and thus causing all particles which strike the glass to adhere. The air approaches the jet through a chamber with damp walls to assure the presence of sufficient vapour to bring about adhesion of the dust. The record thus obtained is mounted for microscopic examination and counted under a 1/12 in. oil-immersion objective with the aid of a micrometer eye-piece. This instrument takes account of all dust particles, whether hygroscopic or not. In the "konimeter" devised by Sir R. N. Kotze for the Miners' Phthisis Prevention Committee of South Africa (1916) and since used extensively for the examination of silicious mine dust, a round jet of air is caused to strike a glass plate on which vaseline is smeared and the particles which adhere are counted. There are, in fact, many methods and it is hard to estimate their relative efficiency. A bulletin [2] just published by the United States Public Health Service, describes some comparative tests. The efficiency of six different instruments was compared for dust produced artificially from iron, grain, silica, coal, and limestone, and was determined by an ingenious application of the Tyndall beam method. Two jets of air, one of which had passed through the instrument to be tested and one of which had not, were viewed side by side against a black background under brilliant illumination. The dust-laden air was diluted with measured amounts of dust-free air until the two streams matched each other in intensity of reflected light, and the amount of dilution required provided a measure of the efficiency. The instruments tested were the sugar tube, in which air is drawn through a filter of fine sugar, subsequently dissolved, and the trapped impurity separated for weighing, or counted in the solution; the Palmer apparatus in which the air is automatically agitated with water spray in a special glass bulb, the resulting suspension being examined gravimetrically or by microscopical counting; the konimeter above referred to; the paper thimble, a little cup of filter-paper used to filter the dust out of a measured volume of the air for subsequent weighing; and the dust determinator, an instrument in which the air is drawn through a filter-paper disc and the quantity of dust estimated from the variation of resistance to flow as the pores become choked with dust. This last instrument could not be compared with the others, its results being in terms of resistance to air-flow. The sixth instrument, called an impinger tube, consists of a tube entering a small flask of about 500 c.cm. capacity and containing about 200 c.cm. of water. The tube ends in a number of small orifices under the surface of the water, whilst at a distance of a few millimetres from these orifices a plate is fixed against which the jets impinge. The air is caused to flow from these orifices by means of an aspirator. There was a great variation in the results obtained by the different methods. Three selected examples of such variation are given, the figures being in dust particles per cubic centimetre for the same air :—

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[1] Presse Médicale, July 29th.

[1] Collected Scientific Papers (Cambridge, 1923).

[2] Comparative Tests of Instruments for Determining Atmospheric Dusts. Public Health Bulletin, No. 144, Treasury Department. United States Public Health Service. Washington. 1925.

	Iron dust.	Silica.	Coal.
Sugar tube	3,798	5,791	519
Palmer apparatus	7,107	3,310	541
Konimeter	2,269	1,417	1079
Impinger	22,811	11,532	1167

The investigation related mainly to dense dusts such as are liable to cause explosions and was not concerned with the smaller and less concentrated particles found in the open air. The Palmer apparatus was considered useful for insoluble dusts, but its efficiency is stated to be low. The konimeter was found to be impossible to use when the dustiness exceeded 600 to 800 particles per cubic centimetre, and this conclusion is supported by investigations by Dr. Owens, in whose experience the use of an adhesive in such instruments makes high efficiency impossible. Impact methods require a very high velocity jet, and if an adhesive is used it is blown away from the point of impact.

THE VALUE OF LUMINAL.

THE number and diversity of the measures that have been advocated in the treatment of epilepsy are a pretty good indication of their ineffectiveness. Psycho-analysis is now ranged with cerebral surgery as of value only in a small group of cases. Good general hygiene and appropriate environment are of great importance but often difficult of attainment. Most practitioners, faced with cases of epilepsy, are chiefly interested in the control of the seizures by medicines. Have any of the new remedies established themselves sufficiently to be worth a trial ? Or does bromine, in one form or another, hold the field to the exclusion of everything else ? The answer is not a simple one. The good old remedies, borax and belladonna, still have their place. Borax would appear to lessen the number of fits, but rarely to arrest them ; while belladonna may give brilliant results in a special group of cases. Peptone therapy, endocrines of various sorts, colloidal palladium are on their trial ; it looks as if the verdict is not to be favourable. But in luminal we seem to possess a valuable weapon. In Germany, America, France, and this country much has been published about its use in epilepsy. The evidence is considerable, but more should be made available. For this reason we welcome the publication by the Metropolitan Asylums Board of the collected experience of its use in four of their institutions, the drug having been given for periods of three months and upwards, in doses of from 1–4 gr. daily, to nearly 200 patients.[1] The results, like those of other observers, have been diverse, but a study of the fit-incidence leaves no doubt that the drug is well worthy of a trial. Nor is its benefit confined to fit-reduction ; improvement in the associated mental state is also noted in many cases. It must be remembered that all, or nearly all, of the patients in this series were certified mental defectives, and it is probable that the recorded results on a similar number of what may be called normal epileptics would be a good deal more encouraging. The answer to the question as to which cases are likely to benefit by luminal is not yet forthcoming. There is a general consensus of opinion that it is most useful when the fits are of the major type and where the disease has only shown itself recently. Dr. O. G. Misquith's experience (see p. 728) is typical in this respect. But much the same is true of bromide or any other drug that reduces fit-incidence. Certain general observations may now be made about the use of luminal. It is of no value in hysterical fits. In cases of epilepsy, tolerance is apt to occur, so that the results in the first three months of luminal treatment may be the best. An alarming increase of fits may occur on withdrawal of the drug which should therefore be gradually effected and carefully watched. Where luminal arrests the fits, especially in children, there may be a change in mental character ; irritability has often been noticed, sometimes of a high degree. Even with small doses, rather formidable morbilliform or scarlatiniform rashes have occasionally appeared. Other toxic symptoms do not occur, unless the dose given be larger than that mentioned. But above this, as Dr. S. Grossman pointed out last week, stupor and restlessness may soon be the result. Outside a resident institution the practitioner will be well advised to make 3-4 gr. the maximum for 24 hours, and not be tempted to increase it if this amount seems to lose its effect. The alarming result of giving (inadvertently) 10 gr. daily for 12 days was set out by Dr. Hildred Carlill in an interesting clinical note a fortnight ago.

ACTIVE IMMUNISATION AGAINST DIPHTHERIA.

LAST autumn our Vienna correspondent described [1] an outbreak of diphtheria in a home for infants and young children at Baden, near Vienna, where as a precautionary measure active immunisation was carried out with a 20 per cent. toxin-antitoxin mixture in about 40 children. Six of these children promptly died with typical local and general symptoms of diphtheritic intoxication, and several others showed areas of skin necrosis of various sizes. The mixture had been tested before being issued on guinea-pigs and had been found non-toxic, and the suggestion offered for its subsequent toxicity was that a dissociation of the toxin and antitoxin had taken place. The cause of this dissociation was not forthcoming. There did not appear, however, to have been any question of accidental freezing of the mixture as in the cases reported in Massachusetts earlier in the same year.[2] Under the circumstances the Austrian Ministry of Health referred the matter to Prof. Pirquet for further inquiry, and in a recent article [3] Dr. E. Helmreich, assistant to Prof. Pirquet, discusses the present position in Austria of active immunisation against diphtheria. During the last 15 years diphtheria in Austria has, it appears, assumed so mild a form that no energetic measures have been taken for dealing with it. Prof. Pirquet himself maintains that the immunity conferred by toxin-antitoxin lasts at most a few years and certainly does not persist throughout life. He is therefore in favour of continuing the method of immunisation which has been practised in the Vienna University Children's Clinic for the last few years in lieu of toxin-antitoxin—viz., careful clinical examination of children exposed to diphtheria, immediate injection with antitoxin of those presenting symptoms suggestive of diphtheria, and Schick testing the rest. Those who gave a negative reaction required no further attention, while those with a positive reaction received 500 units of antitoxin. Should a severe epidemic occur, or new facts be brought to light showing that an absolutely harmless toxin-antitoxin mixture could be supplied, the matter might be reopened. In the meantime he proposed that active immunisation against diphtheria by toxin-antitoxin should be discontinued. Prof. Pirquet's proposal was adopted by the Austrian Ministry of Health, and the performance of active immunisation is now forbidden in Austria. Unfortunately we are still in the dark as to origin of the Vienna tragedy, which has had no parallel in other countries where the use of toxin-antitoxin mixture as a prophylactic is on the increase. We hope that the Austrian authorities will insist on tracing the accident to its source with a view to its avoidance in future rather than simply prohibit one of the most promising avenues of preventive medicine.

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[1] M.A.B. Annual Report, 1924–25, pp. 253 et seq.

[1] THE LANCET, 1924, ii., 1079, 1086.

[2] Journal of the American Medical Association, 1924, lxxiii., 16, 5–9.

[3] Klinische Wochenschrift, August 27th.

WHAT CONSTITUTES A CURE IN PSYCHOTHERAPY?

There is an urgent need for some definite standard of " cure " in psychotherapy, if this form of treatment is to take its place with the established therapeutic procedures. Psychotherapists are divided into several schools and the symptoms grouped under the vague term " neurosis " are very elusive, so that the criterion of cure is much more difficult to determine than in organic disease. Dr. Otto Veraguth has collected[1] definitions of cure from a number of leading psychotherapists. Freud says briefly, " a cure is the restoration of productive ability and the capacity for enjoyment." Stekel defines it as, " the conquest by the neurotic of his tendency to isolation, a regained capacity for work and sexual activity, and abandonment of phantasy in favour of reality." Jung claims that his method produces " a maturity of character, due to conscious understanding and assimilation of the undeveloped parts of the personality enabling the patient to adapt himself to the claims of life which he had hitherto—wittingly or unwittingly—failed to face." Frank distinguishes between a " scientific " cure and a " practical and social " cure. In practice, a cure is claimed when pathological symptoms are no longer seen, although this may be only the result of improved environmental conditions. Bezzola regards a cure as the removal of the bad suggestions induced by education, environment, and psychic trauma, so that the individual is free to educate himself. Maeder distinguishes between the strictly medical and the pedagogic attitude towards the patient. The latter includes, as well as removal of symptoms and restoration of ability, the synthesis of the personality and the integration of the individual as a member of the cosmos. Dr. Veraguth points out that the drive of life may be divided into four main branches from a common stem: The preservation and development, respectively, of the individual and of the species. The drive towards individual evolution, towards differentiation and progress, has received inadequate recognition, but its existence is self-evident. When its activity is limited to somatic processes the individual is an uneducable idiot, but its presence in normal men is reflected in the peculiar plasticity of the human brain; such characters as Faust or the hermit show instances of men whose flow of life energy is disproportionately strong along this channel. The drive towards development of the species expresses itself psychically in the higher forms of affectivity; the man in whom it is excessively energised is the prophet. In the healthy man the four principles should be evenly balanced within the limits of individual and age variation; in the neurotic there is, or has been in the past, a lack of this balance. Dr. Veraguth's definition of psychotherapeutic cure is the restoration of the balance, and he goes on to discuss how it is manifested. The objective signs are the permanence of the result achieved and the freeing of the patient from dependence on his doctor. He quotes a number of cases to show the caution that must be exercised in estimating these signs. " Permanence " must take into consideration the cyclical fluctuation of manic-depressive types; the passage from one psychic phase to another may easily give a false impression of cure. Renewed ability to work must only be taken as a criterion of cure when judged both qualitatively and quantitatively. Renewed capacity for enjoyment must include all aspects of life: the preponderance of sexual difficulties among psychotherapeutic patients has misled some practitioners into regarding restored enjoyment of this function as a sign of cure. Freedom from the doctor's influence must not be confused with a negative transference which is a sign that cure has not been effected. More important, however, than these, in Dr. Veraguth's opinion, is the subjective conviction of the erstwhile patient that his personality has grown, a feeling not of ability to work, but of self-application to work; not of capacity for enjoyment, but of determination to enjoy; not of adaptation to the demands of life, but of a personal choice between adaptation and resistance. A further and peculiar sign of cure is the sense of gratitude for his former symptoms. The patient finds that he has been cured of so much more than he originally complained of that he can rejoice in his former tribulations, since they led him to the treatment that opened up to him new fields of life. Dr. Veraguth ends with a plea, which we cordially endorse, for the publication by experienced psychotherapists of quantitative statistics.

FOULING OF FOOTWAYS BY DOGS.

In the Royal Borough of Kensington there are many flats and maisonettes to which no gardens are attached, with the result that dogs are exercised on the footways. Owing to the fouling of the footways as a result of this practice, the borough council in 1921 obtained the sanction of the Home Secretary to the following by-law:—

> " No person being in charge of a dog in any street or public place and having the dog on a lead shall allow or permit the dog to deposit its excrement upon the public footway.
>
> " Any person offending against this by-law shall be liable to a penalty not exceeding 40*s*."

The by-law was made in pursuance of Section 23 of the Municipal Corporations Act, 1882, Section 16 of the Local Government Act, 1888, and Section 5 of the Local Government Act, 1899, for the good rule and government of the Royal borough. Two officers of the public health department report breaches of the by-law detected by them to the Health Committee. These officers are engaged on other outdoor duties and make their observations whilst passing from place to place in the borough. A leaflet calling attention to the requirements of the by-law has been delivered to a large number of dog owners, a poster in similar terms has been exhibited in the borough, and a printed slip has been attached to the rate demand notices. During 1922 two offences were reported to the Public Health Committee and a warning was issued in each case. In 1923 two warnings were issued and in the case of a third offence a summons was taken out, the defendant being fined 5*s*. In 1924 a conviction was obtained in each of the four summonses issued; in one case the fine was 5*s*. and in each of the other three 10*s*. Dr. James Fenton, borough medical officer of health, tells us that the condition of the footways in the borough has improved very considerably since the by-law came into operation, and that several other boroughs have adopted a similar measure. As Dr. Andrew Balfour has pointed out,[1] the traffic in London streets is now such that the dog can no longer use the roadway for his calls of nature and is obliged for purposes of safety and comfort to resort to the sidewalk. Mr. T. W. M. Cameron, M.R.C.V.S., of Edinburgh, has discussed[2] the dog as a carrier of disease to man, mentioning several roundworms and cestodes which might come into question apart from the dangerous hydatid. The Wellcome Bureau of Scientific Research examined numerous samples of excreta, presumed to be those of the dog, on London pavements in the neighbourhood

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[1] Schweizerische Medizinische Wochenschrift, August 27th.

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[1] The Lancet, 1922, ii., 1165.

[2] The Lancet, 1922, i., 564.

of Gordon-square. Eggs of helminths were found in a small proportion of cases, the type being that of ascaris in 3 per cent., of *Tænia serrata* in 2, and of ankylostoma in 1. In nearly 5 per cent. cysts of giardia were found and a new coccidium of the dog was discovered. The inquiry revealed no evidence of hydatid disease, and Dr. Balfour then expressed the opinion that the presence of dog excrement, however offensive on æsthetic grounds, was not to be regarded as disquieting from the point of view of public health. He admitted, however, that apart from the work of the Wellcome Bureau little, if anything, seemed to be known as to the dangers which might lurk in the fæces of dogs.

A CHANCE FOR THE AMATEUR PHILOSOPHER.

It is supposed that philosophers can retire at will to some higher world where the air is so rarefied that they are undisturbed by the presence of the populace and where everything is so vague that it cannot be offensive. There are none who would find the gift of voluntary translation more useful or more enjoyable than members of the medical profession; but without long practice it is impossible to live in the atmospheric conditions of the abstract world. The novice only too frequently can be heard puffing and blowing in the air just above our heads, and though he may see more than the rest he appears uncomfortable and inadequately balanced. There is, however, a certain number of professionals (so to speak) who are willing to descend from their pinnacles and prescribe suitable exercises which are helpful without being ridiculous. Though nobody imbued with the scientific spirit willingly believes authorities, they can at least show the way by which they got to where they are; and no man can do more. The British Institute of Philosophical Studies is willing to arrange such assistance, and it suggests that certain courses of lectures would be particularly helpful to the medical man who comes back perforce to his material patients from time to time. During the next sessions there will be lectures by Prof. T. H. Pear on Psychology, by Prof. James Johnstone on Life and Mind, and by Prof. Leonard Russell on the Conception of Matter, and each of these is calculated to be of great interest to doctors. The Institute, which is under the presidency of Lord Balfour, will provide courses of lectures on the more important subjects coming within the scope of philosophy; will arrange classes under tutorial guidance; will give assistance to individuals in their reading and encourage research in philosophy, and will form a library. The temporary office is at 88, Kingsway, London, W.C., and it is to be hoped that members of the profession will avail themselves freely of the admirable facilities provided by the Institute. Details of the times and places of the lectures will be found on reference to our advertisement columns.

THE MOTOR EXHIBITION, 1925.

The annual motor exhibition at Olympia, organised by the Society of Motor Manufacturers and Traders, Ltd., in connexion with the Royal Automobile Club, will be held from Oct. 9th to 17th. This great exhibition, which has always been international in character, promises this year to be one of the largest assemblies of everything pertaining to motor-cars that has ever been gathered under one roof, and additional importance attaches to the show as the Paris motor exhibition will not be held this autumn. Whatever gloomy views may be taken of certain British trades and industries, one can hardly feel despondent about the manufacture of motor-cars and their accessories, and in the last four years the number of motor vehicles registered in this country has increased by over 100,000 annually. On the one hand, the market for cars has greatly widened its boundaries, the difficulties attending mass production methods have been largely eliminated, and improved plant has increased output; on the other hand, labour is more costly, taxation heavier, and expenses higher, but nevertheless the balance is on the right side and car value to-day has never been approached at any period of the industry. The car that appeals to the average medical man may be said to be that of the £300 to £400 class, and it is in this class that the keenest competition on the part of the manufacturers has resulted in the maximum advantage to the purchaser. Although no revolution in price, design, or construction is foreshadowed, the process of evolution will be in evidence, not the least in these apparently minor details the perfection of which makes for the difference between owning a car and being owned by it. The exhibition will remain open daily from 10 A.M. to 10 P.M.

Summer-time in Great Britain ends at 3 A.M. on Sunday, Oct. 4th, when the clock will be put back to 2 A.M. In France the return to normal time takes place on Oct. 4th at midnight (zero hour), the change therefore being practically simultaneous on the two sides of the Channel. Belgium follows the French practice.

Some idea of the admirable work done in Iraq during the past two years may be gained from the abstract of the report of the Director-General of Health Services, which appears on p. 733. Reversion to the "simplified" hygiene of purely Eastern government would be especially disastrous since railways and motors have opened up the country to the ravages of epidemics. It would be most regrettable if the British officers in the service should have to cease work before they can build up a local organisation whose members are ready and willing to do the personal work amongst the tribes which is so urgently needed in this disease-ridden country.

The first social evening of the new session of the Royal Society of Medicine will be held on Tuesday, Oct. 27th, at 8.30 P.M., when Fellows and their guests will be received by the President, Sir StClair Thomson, who, at 9.30 P.M. will give a short address on "Shakespeare as a Guide in the Art and Practice of Medicine." The library will be open, and there will be an exhibition of the drugs which are mentioned in Shakespeare's plays; the display will be lent by the Wellcome Historical Medical Museum and arranged by Mr. C. J. S. Thompson, the curator.

Society of Superintendents of Tuberculosis Institutions.—It has been impossible to arrange to hold the proposed Provincial Meeting of this Society at Leeds. The ordinary meeting will be held in London in October. The exact date will be announced later.

Fellowship of Medicine and Post-Graduate Medical Association.—A series of lectures on Tuberculosis will be held in the Lecture-room of the Medical Society, 11, Chandos-street, during October, November, and December. The first lecture will be given on Oct. 12th at 5.30 P.M. by Dr. L. S. Burrell, on Tuberculosis from the Physician's Viewpoint. There is no fee for attendance at this series, and all members of the medical profession will be welcomed. On Monday, Oct. 5th, the Central London Throat, Nose and Ear Hospital will begin a three weeks' course in Laryngology, Rhinology, and Otology. The clinical course will be from about 9 A.M. to 5 P.M. daily, and an operative surgery class will also be held. The operative surgery and the clinical classes may be taken together or singly. The London School of Hygiene and Tropical Medicine have the first two of their series of eight clinical demonstrations on Tuesday, Oct. 6th, and Thursday, Oct. 8th, at 2 P.M. Dr. G. C. Low and Dr. P. Manson-Bahr will consider the more important diseases of tropical countries. Other courses in October will commence as follows: Oct. 12th, a combined course in Children's Diseases at the Paddington Green Hospital, Victoria Hospital for Children, and Children's Clinic; Oct. 19th, a course in Urology at St. Peter's Hospital; Oct. 26th, a course in Dermatology at St. John's Hospital. Copies of any syllabus, together with the Fellowship programme, may be obtained from the Secretary, 1, Wimpole-street, London, W. 1.

Modern Technique in Treatment.

A Series of Special Articles, contributed by invitation, on the Treatment of Medical and Surgical Conditions.

CXLI.—THE TREATMENT OF VISCEROPTOSIS.

A diagnosis of visceroptosis is one which it is only too easy to make on insufficient evidence, and which is only too readily accepted by the patient. To the lay mind the fact that the viscera are dropped or misplaced offers a reasonable explanation to account for symptoms of any and every kind; moreover, it is an idea which it is much easier to implant than to eradicate from the mind of the patient. Hence, it is most important to beware of informing patients that they have visceroptosis, whether general or of special organs such as the kidney, unless the clinical condition is explicable on no other pathological basis; further, when such a diagnosis is made it must be explained clearly that the condition is not a serious one and is readily amenable to treatment.

Possible Organic Lesions.

Before attempting any treatment for visceroptosis the possibility of other organic lesions such as peptic ulcer must be excluded as far as possible, and the diagnosis should never be made apart from radiographic evidence. Even when the latter appears to support the diagnosis, it must be remembered that many individuals who are apparently in perfect health can be shown to have considerable ptosis of such organs as the stomach or colon. In fact, the position of the viscera depends largely on the habitus or general bodily configuration of the patient. Individuals with a long chest and narrow intercostal angle almost invariably have their viscera considerably lower than the broad-chested type with a wide intercostal angle.

The viscera are retained in their normal positions by the abdominal muscles, which maintain a positive intra-abdominal pressure, rather than by the support of the various mesenteries and peritoneal ligaments. Hence, in the treatment of visceroptosis it is to the abdominal muscles that attention must be paid. In this disease, as in all others, prevention is better than cure. Perhaps the most common cause of visceroptosis as a clinical syndrome is pregnancy or particularly a series of pregnancies at relatively short intervals. When the uterus is emptied and contracts down within a few days from a large abdominal tumour to a small pelvic organ, the intra-abdominal pressure is much decreased, and if the patient is allowed to get up too early the abdominal muscles, which have long been on the stretch, are unable to maintain themselves in a sufficient degree of tonus to counteract the tendency of the abdominal viscera to drop downwards and forwards. Hence, in the prophylaxis of visceroptosis it is most important to insist on a patient after delivery remaining in bed or at least recumbent for a fortnight or longer if the abdominal wall is thin or if pregnancies have been frequent.

Restoration of Tone in Abdominal Muscles.

The ultimate cure of visceroptosis is dependent on the restoration of tone in the abdominal muscles, and it is therefore to this end that treatment must be directed. In too many cases abdominal massage is the sole method employed. Though massage may have its uses, particularly in the cases in which constipation is a marked feature, as far as the development of the abdominal musculature is concerned, it is vastly inferior to active movements. The patient should be given a series of exercises designed to bring these muscles into play; in severe and long-standing cases at the beginning the exercises will have to be comparatively light in character, but as the condition improves they can be increased in duration and severity. Where it is possible the patient should be placed under the charge of an expert in remedial exercises; moreover, it is always more satisfactory if these can be done in a class rather than individually, as the presence of other patients in a class tends to produce a competitive spirit and renders the maintenance of discipline more easy. It is impossible in the compass of these notes to describe the exercises in detail; in general, it may be said that they should consist mainly of active movements by the abdominal muscles and the diaphragm, which in most visceroptotic patients is unduly low with a restricted respiratory excursion. Breathing exercises are carried out lying on the back with the legs drawn up and the thorax partially fixed by the arms folded over the chest; the breathing is thus rendered mainly diaphragmatic in type. The recti muscles are exercised by raising the head and neck with the patient on the back and by flexion and extension of the hips with the patient in the same position. It is most important that the patient should be closely supervised especially in the earlier part of the training, in order to ensure that the movements are being carried out correctly and that they are not beyond the patient's strength. Moreover, in addition to the regular exercises done under supervision the importance of carrying out the treatment daily in the home must be impressed on the patient.

Constipation.

One of the most constant and troublesome symptoms in visceroptosis is obstinate constipation. In most cases this is due originally to the lax abdominal muscles having insufficient power to produce a complete evacuation. As a secondary result of this a condition of dyschezia results, in which the rectum becomes insensitive to distension with fæcal material. For the cure of the constipation it is essential that the patient should be re-educated in defæcation; it must be insisted that at a fixed hour after breakfast an attempt should be made to obtain a movement, and that the use of strong purgatives should be discontinued. At the beginning of treatment a daily soap-and-water enema may be necessary, but this should be gradually diminished in bulk from day to day. Massage of the colon is also useful in the treatment, and where possible this should to begin with be carried out by the masseuse with the patient on an X ray couch after a barium meal has been taken on the previous day to outline the large intestine; the masseuse is thus able to be sure of the exact position of the colon. If this procedure is not feasible the masseuse should be provided with a sketch or X ray photograph showing the outline of the colon.

Abdominal Support.

In severe cases an abdominal belt should be worn. This may be either of elastic and webbing material, or a leather and metal instrument such as the Curtis abdominal support. Although the latter is heavier and less comfortable to wear it gives better support and is free from the liability of the elastic type to stretch unduly. In either case the belt must be so adjusted that the direction of pressure must be upwards and backwards. It need not be worn when the patient is in bed or lying down, and when it is being applied the patient must invariably be in a recumbent position with the pelvis raised, as otherwise there is a grave risk of its tending to hold the viscera down rather than up. In cases where a belt is ordered the physician must be careful to explain to the patient that it is not in itself a cure and must not be made an excuse to discontinue the exercise treatment, which should be carried out with the belt removed.

In all true cases of visceroptosis all the organs, rather than a single one such as the stomach, colon, or kidney, are ptosed. Consequently, attempts to deal with individual organs are doomed to failure, though in some cases the most distressing symptoms are occasionally attributable to one particular organ, especially the kidney. In rare cases undue mobility of the latter may lead to severe attacks resembling renal colic, but where these so-called Dietl's crises occur there is often an aberrant renal vessel which obstructs the ureter. In the vast majority of cases with nephroptosis any attempt at nephropexy only aggravates the condition. As a general rule surgery should never be advised unless there is undoubted evidence of ureteric obstruction.

Diet.

As regards diet, patients with visceroptosis are, as a rule, thin and should be encouraged to take a nourishing mixed diet of small bulk. As an intestinal lubricant to enable the fæces to be more readily expelled liquid paraffin is most invaluable and should be taken in small amounts at least twice a day. In cases with marked gastroptosis the patient should be instructed to lie down on the right side for half an hour after meals, as this tends to accelerate the passage of food from the stomach into the intestines.

In very severe cases with marked laxity of the abdominal wall the patient may be kept in bed for some weeks, the foot of the bed being supported on blocks. This takes the tension off the stretched abdominal muscles and allows them to some extent to recover their tone.

The Mental State.

Patients with visceroptosis are usually highly neurotic and often their main occupation in life becomes the minute observance and recording of their symptoms. This aspect of the case is often the most difficult to deal with, and quite apart from other considerations makes any operative treatment extremely undesirable. An attempt must be made to gain the patient's confidence and, if possible, to alter the general mental outlook. Naturally, the most difficult cases are those where the attention of the patient has been focused on some particular organ, such as the kidney, by the ill-judged remarks of the medical attendant.

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Special Articles.

PUBLIC HEALTH ADMINISTRATION.

ADMINISTRATIVE MACHINERY IN EUROPEAN COUNTRIES.*

(*Continued from p. 653.*)

IV. GERMANY.

THE German Reich (realm) is a national entity formed by the federation of 18 States, which, so long and in so far as the Reich does not use its legislative power, possess the right of enacting their own laws. Under various Articles of the Constitution of August 11th, 1919, the Reich has legislative authority in regard to matters affecting the population, the care of mothers, nurslings, children and the young, and health. The Reich Government supervises the execution of Reich laws by the authorities of the various States of which it is composed.

Questions of health affecting the Reich are dealt with mainly by the Reich Ministry of the Interior and the Reich Ministry of Labour. Department II. in the former conducts all business connected with public health, including medical staff, medical examinations and preventive measures against diseases, attempts to procure abortion, infantile mortality, tuberculosis, and the abuse of alcohol and tobacco; the supervision of public food, the advanced training of doctors, pharmacies, the foodstuffs trade, veterinary surgery, and, to a certain extent, industrial hygiene and poor relief come under this department. A special sub-department is directed by a medical counsellor in the Ministry, and two medical secretaries are employed. Department III. deals with education, child welfare, physical training, and training of professional welfare workers. The Reich Ministry of Labour deals with all matters affecting the care of workers and employees.

The Reich Health Office.

The Reich Health Bureau, which is under the control of the Ministry of the Interior, was founded in 1876 to assist the Chancellor and the Ministries in the drafting of legislation and in supervising the execution of laws concerning health. This Office keeps closely in touch with German scientific associations and the central health authorities of foreign countries, compiles medical and veterinary statistics, and promotes, by means of publications, knowledge of public and domestic hygiene. The works published by the Reich Health Office give the results of researches carried on by its members; the Medical Statistical Notes (Medizinalstatistische Mitteilungen) contain calculations based upon the annual statistics, while the Reich Health Office Bulletins (Veröffentlichungen aus dem Reichsgesundheitsamt) give current information as to the situation in Germany in respect of contagious diseases, the proceedings of legislative bodies, associations, &c., and the weekly and monthly statistics; an appendix is also published containing all relevant legal decisions. The Reich Health Office promotes popular education in hygiene by issuing a popular work entitled "Health Manual," as well as memoranda and pamphlets.

The Reich Health Office consists of four departments, the medical, chemical hygiene, bacteriological, and veterinary departments. Auxiliary to it is the Reich Health Council, an advisory body of which the individual members (numbering, at the present time, 75) are chosen by the Reichsrat for a period of five years from among men of prominence in the medical and veterinary spheres (men of science, practising doctors, and technical experts), the President and his deputy being chosen from among the members by the Reich Minister for the Interior. This Health Council is divided into 11 committees, viz.: (1) health matters in general (including questions relating to the health staff); (2) the control of foodstuffs; (3) the prevention of epidemics; (4) water-supply and the removal of waste products; (5) social and school hygiene; (6) factory and industrial hygiene; (7) marine and tropical hygiene; (8) population and race hygiene; (9) provision of medicaments (including the traffic in poisons); (10) veterinary matters (including questions affecting the veterinary personnel, and the inspection of slaughter-houses and meat); (11) statistics. It is the duty of the Reich Health Council to give advice, on request, to the authorities of the several States.

The laws regarding public health are executed by officials of the various Federal States, on lines laid down in the executive regulations issued by the Reich authorities.

Health Administration in the Federal States.

Where the Reich authorities have refrained from promulgating laws regarding public health, the German States, with Prussia at their head, have by their own laws organised a public health service on admirable lines. The highest Prussian health authority is the Ministry for Public Welfare. Department I. of this Ministry, which is under a doctor, deals with public health matters (including police sanitary regulations); Department II. deals with housing and land settlement, and Department III. with the care of the young and general welfare work. The Ministry also has control of the Robert Koch Institute for Infectious Diseases, the State Hydropathic Institute, two hygiene institutes, 10 medical analysis stations, two typhoid laboratories, and the State foodstuff laboratory. The Ministry is assisted by a State Health Council; for the provinces joint boards have been set up composed of lawyers and doctors. The police authorities of the provinces and districts (the Ober and Regierungspräsidenten) are advised by the Regierungs und Medizinalräte. The law of Sept. 19th, 1899, regulated the official duties of the medical officer of the "Kreis" (county), and established health committees in the communes (in places of over 5000 inhabitants). The work of the medical officers is regulated by the local police authorities (the Landrat, the Commissioner of Police, or the magistrate). It is the duty of the health committees to carry out a joint system of inspection, to support measures taken by the police authorities, to give expert advice and to make suggestions.

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* Based on a Series of Reports on National Health Organisation to the Health Section of the League of Nations and on Statistical Handbooks prepared by the Section. Obtainable in Great Britain from Constable and Co.

In the other German States the health authorities are organised on similar lines. In many instances the technical advisory body has the title of "State Office of Health," and is, in most cases, under the control of the Ministry of the Interior (in Thuringia it is under the Ministry of Commerce). Special Health Ministries under medical administration do not exist in the Reich or in any of the States.

The work of public instruction in matters of hygiene has been energetically taken in hand by a Reich Committee and by State Committees with their subsidiary organisations. The work of welfare and health offices specially concerned with care work (on behalf of infants, tuberculous persons, persons suffering from venereal disease, cripples, &c.), which have recently been established in large numbers by the Kreis and municipal authorities, is carried on by the public medical officers, specially appointed communal doctors, practising doctors, and a carefully trained staff of care workers. The competent State authorities direct this work.

The Medical Staff.

Prussia has, at the present time, at its disposal some 449 Kreis medical officers, of whom 274 receive full-time and 175 only part-time salaries. The medical officers of the Kreise are, for the most part, recruited from Kreis assistant medical officers (rarely from practising doctors), provided that they have passed the prescribed State medical examination; "Regierungs und Medizinalräte" are recruited from Kreis medical officers; while the Ministerialräte in the medical department of the Ministry for Public Welfare are mostly chosen from among the Regierungs und Medizinalräte. The whole territory of the Reich had in round numbers 950 medical officers of the categories mentioned at its disposal. In general the service is regulated as in Prussia.

In most of the States appointment as a State health official or medical officer is conditional upon passing the examination for State doctors, the regulations for which vary but little in different States. In Prussia, which is fairly typical, the candidate must not only have followed a course of lectures on forensic medicine and taken part for at least six months in the practical work of a psychiatric clinic, but he must also have completed a full course of study in social hygiene at Breslau, Charlottenburg, or Düsseldorf. In addition, he must have taken courses of pathological anatomy, bacteriological hygiene, and forensic medicine, each of at least three months' duration; and he must have acted as assistant in a psychiatric clinic for at least three months. The candidate may not be re-examined more than once. In Prussia it is a condition of appointment as Kreis medical officer that the candidate should have worked five years as an independent medical practitioner after passing the examination.

Special regulations apply to posts as tuberculosis expert or as medical officer in charge of infants, small children, cripples or persons suffering from alcoholism, or as school doctor. It is recommended that the communal medical officers, whose duty it is to advise the communal administration in all matters of public health and social hygiene, should be required to pass the examination prescribed for Kreis medical officers. In rural Kreise the communal medical work can be carried out by the Kreis medical officer, who also takes charge of the public health and social hygiene section of Kreis welfare centres. In the larger towns appointment of special communal medical officers is necessary, subject to the control of the medical officer of the Kreis or district. Among the assistants of medical officers in combating epidemics are disinfection officials. In many Kreise special disinfection officials have also been appointed to act as "health inspectors."

The medical organisations which have been formed in all the States of the Reich are, as a rule, representative professional bodies (associations of doctors, which, in some States, are legally regulated, and often have disciplinary powers in regard to their members). Their participation in the work of public health is of importance, inasmuch as they send representatives to the various State organisations of a technical medical character, the health councils, &c. The latter utilise their services for the purpose of bringing recommendations and proposals relating to special health questions to the notice of individual doctors.

V. AUSTRIA.

The organisation of the Imperial Health Service is maintained in its essentials in the Republic. The Health Department in the Ministry for Internal Affairs has been abolished, and a special section of the Federal Ministry for Social Administration, the Public Health Office, is now the highest authority in health matters. The organisation comprises a principal board of health, provincial boards of health, district commissionerships, divisional medical officers, municipal medical officers, communal and district medical officers. The provinces (formerly Crown lands) are Vienna, Lower Austria, Upper Austria, Salzburg, Styria, Carinthia, Tyrol, Vorarlberg, and the Burgenland. Each province has its own health officers, and a provincial board of health which acts as scientific and technical adviser. Each province is divided into administrative districts (113 throughout Austria)—under a district commissioner (Bezirkshauptmann), with a divisional medical officer attached. Towns possessing a separate statute are administered politically by the mayor, instead of the district commissioner, with a municipal council. To this council is attached a municipal health officer (Stadtphysikus), while in boroughs or villages the administrative organ and scientific expert are represented by the communal medical officer (Gemeindearzt) or by a district medical officer in charge of several communes (Distriktarzt).

The law of April 20th, 1870 (Imperial Gazette, No. 68, of the "Imperial Public Health Law"), amended and supplemented, still forms the main basis of the organisation of the public health services. It places the supreme control over the whole health organisation and of all medical affairs under the direction of the Government, acting either directly or indirectly through the provincial authorities. The Government is thus responsible for the records of the health personnel and for its supervision; for the supervision of all hospitals, including lunatic asylums, vaccination establishments, and of spas; private institutions may not be established without permission from the State. The application of the laws regarding infectious diseases, the control of traffic in drugs and poison, the supervision of vaccination—these and all cognate duties are vested in the Government. The responsibility for the actual carrying out of the law, and for the promotion of activities of the public health services, rests on the communes, on lines laid down by provincial legislation which in turn are framed to give effect to the laws issued by the Government to apply to the whole Republic. Included in the duties of the communes, which are carried out by municipal or district medical officers, is the drawing up of periodical health reports and submitting them to Government authorities.

The health administration of Austria, like its political administration, is thus carried out by authorities of three grades, of which the highest is the Office of Public Health previously referred to.

The first or lowest grade are the municipal, communal, or district medical officers. Officers of the second grade are the medical officers attached to Provincial Governments. In these two grades the executive work in connexion with public health is carried out by medical men, acting under the administration of the corresponding local authority.[1]

Constitution of the Office of Public Health.

The Office of Public Health in the Federal Ministry for Social Affairs (third grade) combines executive powers with the duties of supervising and giving expert opinions and is, as has been said, the central authority on all health matters. At the present time the Office of Public Health consists of the four following departments:—

Dept. 1.—General health administration, dealing among other with matters affecting the professional standing of medical men; the education of doctors in general as well as of State medical officers; the organisation of public health under the Federal authorities. The public health aspects of social and private insurance, industrial hygiene, statistics, and health propaganda also come under the control of this department, which is further charged with the editorial work of the "Mitteilungen des Volksgesundheitsamtes" (Bulletin of the National Public Health Office).

Dept. 2 has control of measures for the maintenance of public health, including, for example, prophylaxis against and prevention of infectious diseases; bacteriological institutes for the manufacture of vaccines; the campaign against tuberculosis, venereal diseases, and alcoholism; water-supply; domestic hygiene and the hygiene of nutrition. The professional training of chemists and druggists and their status is supervised by this department as also the Institute of Chemico-Pharmaceutical Research.

Dept. 3 has the general control of hospitals administered by the State, and of schools for the training of nurses and midwives, also the care of mothers, infants, and young children, including school hygiene. Red Cross and first-aid arrangements are here dealt with.

Dept. 4, under a trained lawyer, deals with the legal aspects of public health questions, including lunacy administration.

A medical officer of the Federal Ministry of War serves as a representative of that Ministry on the Office of Public Health. In 1922 this Office had 32 doctors among its members. The procedure adopted in connexion with sanitary legislation is that the Central Office issues circular decrees to all the provincial offices, which transmit instructions to the district authorities. The Office of Public Health has no laboratories of its own for scientific research.

The Central and Provincial Boards of Health.

Over and above this administrative administration the Imperial Public Health Law provides for the establishment of a Central Board of Health, whose duty it is to assist the administration as an advisory and expert organisation. The "ordinary" members have the right to the title of Public Health Councillor and are unpaid. Extraordinary members include specialists called in as occasion requires. There are corresponding provincial boards of health whose members include the chief sanitary officials of the provinces. The chief public official of each province makes journeys of inspection throughout his district in order to supervise the application of sanitary law. The communal doctors, or municipal medical officers as the case may be, are also required to make journeys through their districts for the same purpose. On the outbreak of epidemics they must take any measures which they deem to be necessary on their own responsibility, and under inter-State agreements they are now empowered to cross the frontiers and to enforce urgent measures in association with the frontier authorities of any other country concerned. Since the National Sanitary Department forms a branch of the political administration and holds a place amongst the organisations the medical officials are subordinate in purely sanitary matters to the non-medical heads of these organisations. In the event of discord no legal guarantee is provided that the views of the medical officials will prevail. As a matter of fact, however, no disputes have arisen.

In 1918 the duties of the Army Health Service were transferred to the Office of Public Health. The present army administration has no hospital of its own and sick soldiers receive treatment in civilian hospitals.

The Training of the Health Personnel.

The professional training of all doctors, dental operatives, midwives, and pharmaceutical chemists is regulated by the State, and the requirements for courses of study and examinations are indicated in this report. Post-graduate training in order to obtain a post as doctor in the Public Sanitary Service is required, and the passing of an examination in hygiene and sanitary law, medical jurisprudence, including forensic psychology; pharmacology, including a knowledge of the commoner poisons; veterinary police regulations. The length of special training required is not specified, but it is stated that a reform of the district medical officers' examination is contemplated. As to the higher training of senior State medical officers, special courses are held from time to time in university towns. All State medical officers are Federal officials and their work under the State health administration must be conducted as their main profession. Medical officers of the first degree are not forbidden private practice.

Pharmaceutical Chemists.—A distinction is drawn between public pharmacies on the one hand and the private pharmacies of doctors and emergency pharmaceutical installations on the other. Public pharmacists are either licensed or proprietary. The applicant for authority to carry on the business of a public pharmacist must have undergone technical training for a minimum period of five years after taking his degree of Master of Pharmacy, or in the case of establishment of new pharmacists for 15 years. A doctor may only maintain a house pharmacy if there is no public pharmacy near his place of residence.

Dental Operatives.—The legal status of fully qualified dental practitioners and that of dental operatives is laid down by the State. Owing to the shortage of dental operatives just after the war special concessions were made to certain dental operatives who began a three years' course of training before Oct. 1st, 1920, but since these concessions do not apply to those who began their training after this date, the dental operative in Austria with a recognised professional status must necessarily disappear in the course of a few decades.

Midwives.—There is as yet no uniform law on midwifery applicable to the whole country. Women who wish to become midwives have to take a ten months' course of instruction in one of six Austrian instructional institutes and to pass an examination, and they are then entitled to practise midwifery as an independent profession throughout the territory of Austria. Before beginning practice they have to report to the administrative authorities and are placed under the supervision of the district medical officer. No State midwifery system has been instituted. The communes and towns have to provide midwives for prospective mothers without means. A proposal for a general midwifery law, which has been drawn up with the assistance of Prof. L. Piskacek, is awaiting consideration by Parliament.

GUY'S HOSPITAL MEDICAL SCHOOL: SENIOR SCIENCE SCHOLARSHIPS.—The following awards have been made at Guy's Hospital Medical School: O. A. Beadle, New College, Oxford, War Memorial scholarship, £80; L. T. Ride, New College, Oxford, £80.

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[1] In Vienna the first and second grade are in the hands of the single authority, the Municipal Council.

VIENNA.

(From our own Correspondent.)

Lymphogranulomatous Tumour.

At a recent meeting of the Surgical Society of Vienna, Dr. Steindl demonstrated a tumour obtained from a woman aged 38, with a history of vague pains in the abdomen and continuous loss of flesh for a year. Clinical investigation confirmed the diagnosis of cancer of the stomach, but on operation it was found that the muscular layers of the stomach were hypertrophied, while the mucosa was replaced by a brownish, soft, cushion-like tissue, showing small yellowish nodules in its substance; the pyloric end in particular was thus affected. No ulcerations were visible, and on operation there was nothing of a pathological nature to be noted in the intestines, the liver, pancreas or the mesenteric glands. The microscopic sections of the parts removed, also of some of the glands taken from the gastro-iliac ligament and the smaller omentum, showed the typical picture of lymphogranulomatosis. Two months after operation the percentage of both mononuclear and eosinophil leucocytes had gone down considerably, while the lymphocytes had increased threefold to 36·7 per cent. Dr. Steindl claimed that this was the first case of lymphogranulomatosis localised in the stomach which had been successfully operated upon. A second case was reported by Prof. Ewald, who stated that ten years ago he had seen a woman with an inoperable and fixed malignant growth who suffered from attacks of severe dyspnœa, but showing no other symptoms of malignant disease. The surgeon attempted to diminish the size of the tumour by a partial resection, but the operation had to be abandoned and a tracheotomy was performed. Microscopic examination of portions of the tumour showed the presence not of the suspected sarcoma, but of lymphogranulomatosis. After-treatment with tuberculin and X rays caused a rapid diminution of the tumour. Since then the patient has undergone a course of X ray treatment twice or three times a year, but this is sufficient to keep the condition in check. The struma has not reappeared, and there are no enlarged glands in the neck, although a swelling sometimes appears in the mediastinum, causing attacks of dyspnœa.

Flora and Fauna of Hot Springs.

Prof. Hans Molisch, who for the past three years has been working in the botanical and physiological institute of the University of Tokio (Japan), read a very interesting paper in the Biological Society of Vienna on his return to this city. In certain districts of Japan, he said, nearly every house has its own hot spring. He investigated the flora and the fauna of these springs and found that, up to the temperature of 69° C., living organisms, such as bacteria, algæ, amœbæ, infusoria, rotifers, and eels, could exist therein. The most interesting organism, however, is the cyanophyceæ. This group of algæ flourishes in water at a temperature which kills off, in a short time, all other living organisms. They can also live in ordinary water, and the spores of these plants are present in nearly all springs and rivulets in large numbers. Prof. Molisch thinks that the thermophile bacteria and algæ are the direct descendants of the aboriginal organisms which inhabited the earth at a time when its surface and its waters were very hot.

Outbreak of Typhoid near Vienna.

Typhoid fever in our city is such a rarity, thanks to our mountain water-supply, that many students of medicine here never see a case in the hospitals. There was some excitement, therefore, when it became known that in a small holiday resort near Vienna a few cases had occurred; 25 persons were infected and four died before radical measures for the control of the outbreak were instituted by the local authorities, a rather regrettable delay. It appears that the epidemic has been introduced by visitors returning from Italy. This year many holiday makers and "sun-seekers" travelled from Austria to Italy, especially to the eastern coast, and it is presumed that the unwonted kind of food, as well as the large quantity of fruit consumed there, upset the digestions of many of these excursionists, and in addition was responsible for the original cases of typhoid. In connexion with this occurrence very marked attention is being paid now to a new possible source of contamination of the Vienna water-supply; 40 per cent. of the water is supplied by wells and springs originating in the Rax mountains, which lie about 60 miles south-west from Vienna, and are some 6500 feet high. The wonderful scenery of this Alpine district attracts enormous numbers of visitors yearly, and a funicular railway to the summit of the Rax plateau is now under construction. The Board of Health of Vienna, however, has recently pointed out that the influx of visitors following on the construction of the railway will constitute a potential source of contamination of these springs, and thus threaten the health of Vienna. The Board advises either the cessation of the railway work until all springs are adequately protected, or else the construction of a new water-supply. It must be added, however, that geological experts nevertheless regard such fears as groundless, since the geological strata intervening between the course of the railway and the springs are more than sufficient to guarantee perfect sterility of all water that might possibly trickle through to the springs.

MEMORIAL TO HIPPOCRATES.

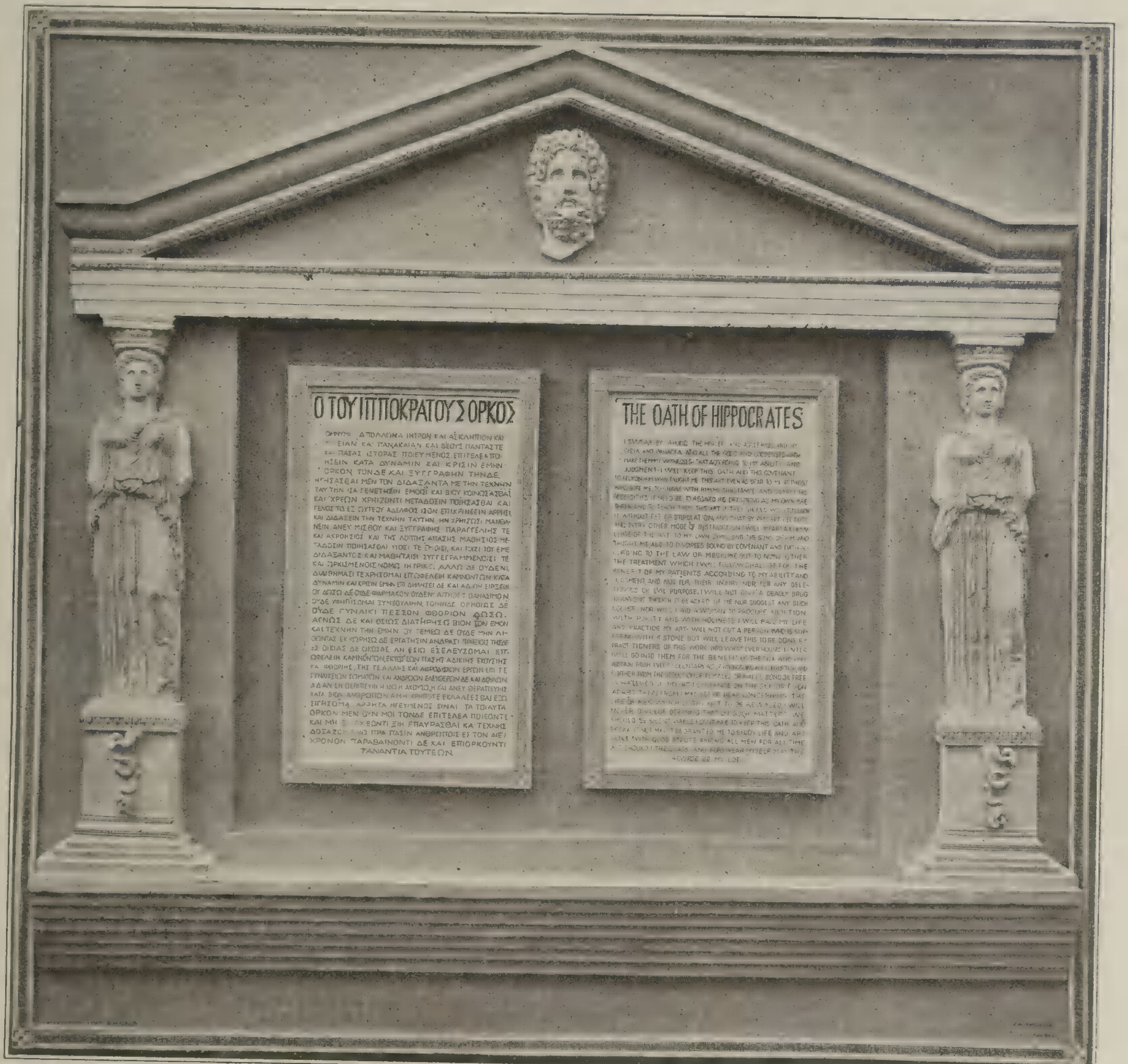
Dr. Ernest Mayer Neville, of Ealing, London, W., has conceived, designed, and executed personally a memorial to "Hippocrates, the Father of Medicine." The memorial is a presentation of the "Oath of Hippocrates" in a setting of classic Greek antiquity. It will be seen from the reproduction given below that this conception is expressed through the medium of a Greek temple, at the entrance of which are placed two tablets, bearing the oath engraved in Greek and English.

The Hippocratic oath is given in the original classic Greek form (Ionic dialect, edition Littré) side by side with the English translation. The spatial distribution of the texts has been arranged in a symmetrical, compact, and organic manner, in correspondence with the general architectonic design of the memorial. They are engraved in classic Greek fashion on oblong tablets which have ornamental borders and corners of classic Greek design. In the English translation the author has striven to keep as close to the original text as is compatible with English phraseology and meaning. The initial part of the oath has been emphasised by treating it separately as a kind of preamble, and the end of the oath has also been accentuated by letting it stand out quasi as a finale, a warning memento. (T'Anantia Toyteon—Reverse be my Lot.)

The tablets are flanked by caryatids, draped figures from the temple of Erechtheus (Erechtheion) on the Acropolis of Athens, a building in pure Ionic style (original specimen now in the British Museum, of which they are direct copies). They are raised on pedestals, which are replicas in style of the original wall on which the caryatids of the Erechtheion stood. The face of each pedestal is guarded by a snake, the symbol of medical art and perspicacity, copied directly from the original statue of Apollo Citharoedus (Cyrene) in the British Museum. These snakes are conspicuous through their natural and graceful poise and the other reptilian characteristics. The caryatids support the entablature and the pediment, Ionic in order. The centre of the pediment is held by the dominating head of Asclepius, the God of Medicine, expressive of exquisite physical beauty, serene wisdom, and divine benevolence; it is a direct copy of the original in the British Museum. The snakes mentioned above have their gaze fixed upon this head, as if compelled by its magnetism. The whole structure of the temple rests, in accordance with classic Greek feeling, on steps, of which there are seven, a number symbolical of spiritual values. The background of the memorial is bordered by classical ornamental design.

The original is in plaster-of-Paris, 5 ft. by 5½ ft., weighing 250 lb., and has been on private exhibition to leading British medical men. It was also inspected on the occasion of the visit of the Inter-State Post-Graduate Assembly of America. As a result of suggestions made, a large-size photogravure de luxe of the tablet will be reproduced by a well-known house and published in limited numbers for the medical profession only.

THE MEMORIAL TO HIPPOCRATES.



Translation of the Oath.—I swear by Apollo the healer, and Asclepius, and Hygieia, and Panacea, and all the gods and goddesses—and I make them my witnesses—that, according to my ability and judgment, I will keep this oath and this covenant: to reckon him who taught me this art even as dear to me as those who bore me, to share with him my substance and supply his necessities, if need be, to regard his offspring as my own brethren, and to teach them this art, if they should wish to learn it, without fee or stipulation, and that by precept, lecture, and every other mode of instruction, I will impart a knowledge of the art to my own sons, and the sons of him who taught me, and to disciples bound by covenant and oath according to the law of medicine, but to none other. The treatment which I will follow shall be for the benefit of my patients, according to my ability and judgment, and not for their injury, nor for any deleterious or evil purpose. I will not give a deadly drug to anyone, though it be asked of me, nor suggest any such course, nor will I aid a woman to procure abortion. With purity and with holiness I will pass my life and practise my art. I will not cut a person who is suffering with a stone, but will leave this to be done by practitioners of this work. Into whatever houses I enter I will go into them for the benefit of the sick, and will abstain from every voluntary act of wrongdoing and corruption, and further from the seduction of females or males, bond or free. Whatever in my attendance on the sick or even apart therefrom, I may see or hear concerning the life of men which ought not to be revealed, I will never divulge, deeming that on such matters we should be silent. While I continue to keep this oath and break it not, may it be granted me to enjoy life and art alike, with good repute among all men for all time. But should I trespass and forswear myself, may the reverse be my lot.

PROCEEDINGS OF THE ROYAL COMMISSION ON NATIONAL HEALTH INSURANCE.*

(Continued from p. 619.)

Joint Tuberculosis Council.

(App. XCIII. and Q. 22184–22251.)

THIS Council claims to represent the collective views of medical men engaged, officially or otherwise, in combating tuberculosis. Sir Henry Gauvain and Dr. Lissant Cox presented the evidence.

It was submitted that the special measures adopted in fighting tuberculosis, in association with the general advance in other public health work, have done their part in reducing the mortality from this disease, and that, apart from the actual fall in the death-rate from this disease, the number of "carrier" cases was diminishing, and also that—

> The education of tuberculous patients in elementary hygienic methods and the isolation in hospitals of infective cases from overcrowded and insanitary homes is having, and is bound to have, a beneficial effect on the number of new cases occurring.

All tuberculosis work now centres in the dispensary, which is not ordinarily a centre for treatment but for diagnosis, with the aid of the special facilities which exist at the dispensary, and for consultation between the tuberculosis officer and the general practitioner. The Council urged that there should be a special extension of sickness benefit for tuberculous persons, as their premature return to work is positively harmful to themselves and to their families. The opinion was expressed that societies should use their surpluses to aid specially research and care work in connexion with tuberculosis.

The return of patients from the sanatorium to their original occupations was advisable, the insured person being given part-time employment and continuing to receive sickness benefit, subject to more or less continuous medical supervision.

> Would you expect any trade-union objections to such part-time arrangements ?—No, not so long as the arrangements were not abused.
>
> Would you anticipate that employers would willingly meet the difficulties of organisation of their work consequent upon taking on part-time men who probably would require special arrangements in view of their medical history ?—We do not suggest that employers should be expected to alter their arrangements for odd cases, but most cases, we think, could be fitted in without special arrangements upsetting other workers.

The witnesses said that the part-time employment of men in their ordinary occupations should have a sympathetic public opinion behind it, and that it was preferable to establishing colonies—indeed, they doubted if the Papworth experiment, while in itself a brilliant success, could be reproduced generally under public management.

Cambridgeshire Tuberculosis After-Care Association.

(App. LXXXIII. and Q. 20856–20931.)

Dr. P. C. Varrier-Jones and Mr. Bunnett gave evidence. They pointed out that the Insurance Act presupposes that insured persons will either be wholly incapable of work or else will be able to earn a normal wage, and that, in the special case of the tuberculous person, to limit cash payments to those who are wholly incapable of work is definitely harmful to the treatment of this disease, and brings with it serious and expensive consequences.

> One of two things happens at the present time : either the patient is afraid to work at all (a six months' stay in a sanatorium makes it the more difficult to begin again), because he fears that he will be unable to stand the strain ; or the patient attempts a full day's work under commercial conditions and almost immediately breaks down.

The longer the ex-sanatorium patient is kept as a productive unit of society, the less fear is there of the family's resistance being lowered and of the spread of the disease among them. This point has been proved at the Papworth Village Settlement, where up to the present, with graduated sheltered employment for the bread-winner, no case of pulmonary or other tuberculosis has been discovered in the children.

The payment of sickness benefit to a partially incapacitated tuberculous person could be justified on the ground that the gradual employment of the tuberculous person prevents the spread of infection. Certificates should be given signed by the general practitioner and countersigned by the tuberculosis officer. Such partial employment can best be carried out under sheltered conditions in a colony such as Papworth.

> We do not attempt to train a man to be a carpenter, or whatever it may be, and return him to the outside world, because the competition is too great ; but we are able to set him up in workshops in the Village Settlement and provide him and his family with proper housing conditions, and they remain there for the rest of their lives, earning wages in the industries which now have a turnover of over £50,000 a year.

About 75 to 80 per cent. of the men in the Village Settlement are ex-Service men in receipt of a pension, and Dr. Varrier-Jones is anxious, by the operation of a scheme of sickness benefit for partly employed tuberculous men, to place the ordinary civilian in the same economic position as the ex-Service men.

The London County Council on the Treatment of Tuberculosis.

(App. LXXXIV. and Q. 20932–21050.)

This evidence, given by Mr. G. H. Walmisley, did not differ in any material respect from the evidence given by the Joint Tuberculosis Council and the Cambridgeshire After-Care Association.

Grants from the National Health Insurance Funds were recommended to be made in aid of approved work-centres at which post-sanatorium cases could be employed under the medical supervision of the tuberculosis officer, and it was also proposed that the surpluses of Approved Societies should be applied in part for the assistance of tuberculous persons on a similar basis to the provision made for ex-Service men by the British Red Cross and United Services Fund.

The experience of the Council, generally, and the operation of an experimental scheme at Hatton Garden in particular, and also the discouraging result of efforts to find suitable employment for tuberculous persons in the open market, have led the Council to the view that work-centres offer the most favourable opportunity for the employment of many such persons. As to persons suffering from other complaints the witness said that he knew of none to which the same arguments would apply with equal force.

> Have you ever considered whether there is a practicable case for doing something for the blind man to get half a day's remunerative work on the lines of your tuberculosis scheme ?—I think the cases are similar to a certain point, but you do not, in the case of the blind, get the result, by doing this part-time work, of improving the man's health.

Financial aid was essential to place the ordinary civilian in the same economic position as the ex-Service man with his pension.

British Social Hygiene Council.

(App. LXXXII. and Q. 20760–20855.)

The National Council for Combating Venereal Diseases, founded as a voluntary organisation in 1914, has, since 1918, been in receipt of an annual grant from the Ministry of Health for certain approved forms of propaganda work. It became an incorporated body in 1922. It is now known as the British Social Hygiene Council.

Evidence was given by Mr. E. B. Turner, Dr. Otto May, Mr. Leonard Bowden, and Dr. P. A. Clements.

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* References to the paragraphs in the printed statements issued as appendices to the reports of the oral evidence are given thus : "App. X. 69," and references to the oral evidence thus—Q. 1369.

It was pointed out that there is no permissive clause in the National Health Insurance Act by which Approved Societies or Insurance Committees, if they so desire, may contribute from their benefit fund to the funds of the National Council or, indeed, any society engaged in research or health propaganda. It was also urged that the medical benefit regulations should be amended to provide for more detailed certification, and also that efforts should be made to improve the equipment of the general practitioner so as to enable him to make adequate modern diagnosis and give the required treatment.

> Of the whole of the practitioners in London there are only 400 men who are qualified to be supplied with free salvarsan, and those 400 are the result of a very intensive campaign which was carried on in 1917 to 1918. . . . The ideal we should like would be that the practitioners throughout the whole country should be the first line of defence against these illnesses, that they should be encouraged in every way to become absolutely *au fait* with modern up-to-date methods, and that they should then employ them the moment they come across their cases.

The London Insurance Committee.

(App. XCVIII. and Q. 22838–22974.)

Mr. Henry Lesser gave evidence as to the working of the medical benefit scheme in London. He urged that the whole of the skill of every insurance practitioner should be available for his patients without charge, and he agreed that it was essential that this recommendation should go hand in hand with the Committee's wider proposal that a complete general practitioner service with a coördinated hospital service should be made available to insured persons at the earliest opportunity.

The Insurance Committee should have power, it was suggested, to refuse admission to the panel when, after consultation with the Panel Committee, they thought this to be desirable. The largest panels should be further limited with the advantage, amongst others, of enabling young practitioners to get a footing in the service. The witness said that the Committee were not in possession of evidence to show that the London medical service was inferior to that given elsewhere. He said that it was a fair and an improving service.

Amongst minor recommendations the Committee said that power should be given to the Medical Service Subcommittee to require witnesses to give evidence on oath, and that in the case of an appeal made by a practitioner against a decision of the Committee costs should be awarded to follow the result of the appeal.

The Services.

ROYAL NAVAL MEDICAL SERVICE.

Surg. Comdr. A. F. Fleming is placed on the Retd. List with the rank of Surg. Capt.

Surg. Lt. A. G. Bee to be Surg. Lt.-Comdr.

R. C. Foster to be Surg. Lt.

ROYAL NAVAL VOLUNTEER RESERVE.

Proby. Surg. Lt. (D.) C. H. A. Fido to be Surg. Lt. (D.).

ROYAL ARMY MEDICAL CORPS.

Maj. W. C. Nimmo, from half-pay list, retires on ret. pay on account of ill-health.

Maj. R. C. Wilmot to be Lt.-Col., vice Lt.-Col. F. W. W. Dawson, ret.

Capt. G. L. K. Finlay to be Temp. Capt., and relinquishes the rank of Capt.

ARMY RESERVE OF OFFICERS.

2nd Lt. J. V. Dockray, from the Buffs, Reg. Army Res. of Off., to be Lt.

TERRITORIAL ARMY.

Capt. J. Walker to be Maj.

ROYAL AIR FORCE.

Flying Officer S. G. Gilmore and R. H. Stanbridge are granted permanent commissions in the rank stated.

Public Health Services.

REPORTS OF MEDICAL OFFICERS OF HEALTH.

THE following are some of the health statistics of a city, six county boroughs, and one Scotch burgh for 1924 :—

Name of town.	Estimated mid-year population (R.-G.).	Birth-rate.	Death-rates per 1000 of the population.				Death-rates per 1000 births.		
			All causes.	Tuberculosis.	Cancer.	Resp. diseases with influenza.	Neonatal mortality.	Infant mortality.	Maternal mort. from childbirth.
Coventry C. ..	132,000	16·0	9·6	1·11	1·12	1·8	37	79	4·2
Stockport C.B. .	126,000	16·4	13·9	1·16	1·33	3·8	29	87	5·8
Preston C.B. ..	123,100	18·9	13·9	1·13	1·29	3·6	42	97	6·0
Huddersfield C.B.	111,800	14·5	14·0	1·08	1·57	3·8	48	97	3·7
Halifax C.B. ..	98,750	14·9	15·3	0·71	—	—	57	96	4·0
Northampton C.B.	93,590	16·4	11·1	1·10	1·39	2·2	25	52	4·6
Paisley B... ..	86,647	21·6	16·1	1·06	1·25	3·7	47	139	9·6
Warrington C.B.	78,120	21·0	11·6	1·41	1·07	2·6	30	84	4·3

C. = city. C.B. = county borough. B. = burgh.
— = not given.

Coventry.

Dr. E. H. Snell reports that the usual re-inspection was made of all the houses which have been converted from "back-to-back" to "through-ventilated" houses since 1909 ; and these houses were, without exception, found to be properly occupied as through-ventilated houses. In discussing the cause for the rise in the infant mortality-rate in 1924, as compared with the previous year, Dr. Snell points out that in addition to the increase of 2·5 for whooping-cough and 2·9 for bronchitis, there is a rise of 4 per 1000 births for diarrhœa. The summer of 1924 was cold and wet and an increase in the diarrhœa-rate was not to be expected. Dr. Snell says it is impossible to avoid the conclusion that some of this increase in the infant mortality-rate is due to the set-back in the work of the health visitors, caused by the reduction of their number from ten to five at the beginning of 1923. The number has now been increased to eight by the last addition to the staff in October, 1924. Only 18 specimens of milk were examined for tubercle, the results being negative; and Dr. Snell points out that the absence of legislation forbidding the movement of cows found to be giving tuberculous milk almost nullifies the advantages of the milk clauses, although this will, it is hoped, be remedied by the re-introduction of the Tuberculosis Order.

Dr. J. McG. Williams reports as the most notable event of the year the opening of the King Edward VII. Memorial Sanatorium, which occupies a fine position on the high ground of Hartford Hill, about two miles from Warwick. The sanatorium accommodates 66 men, 50 women, and 34 children, and is intended for early cases only. The institutional treatment of tuberculosis is carried out by the Warwickshire and Coventry Joint Committee for Tuberculosis which also used the Bramcote Sanatorium as their second institution. Dr. Snell thinks that one of the greatest objections to such delegation of the institutional treatment of tuberculosis to a special committee with its own medical officers, is the fact that there is thus formed a more or less water-tight compartment with a tendency to regard the treatment of the patient as the beginning and end of the campaign against tuberculosis. The Ministry of Health have always advised that tuberculosis officers should be closely associated with the preventive measures of the local authority. With a view to bringing about such an association, the Joint Committee have forwarded to the various sanitary authorities of the county the recommendation of the Ministry that the tuberculosis officers should be also appointed assistant medical officers of health. Some of the sanitary authorities fell in with the proposal, but others, amongst which was the city of Coventry, did not.

Stockport.

Dr. Arthur G. Jenner records 37 notifications of encephalitis lethargica with eight deaths. In two cases there was evidence of direct infection. The borough maternity home, "Glebe House," with its eight beds, admitted 192 cases during the year. The average stay of each patient was 14 days, and no maternal deaths occurred. As the accommodation at Glebe House is inadequate, the corporation have purchased the Mile End Hall Estate where, after the necessary alterations have been carried out, there will be accommodation for 15 cases. The number of new houses erected during 1924 was 241, as compared with 176 during the previous year, and the number in course of building at the end of the year was 351. In spite of this improvement, Dr. Jenner calls attention to the lack of houses of the smaller type. Only 11 samples of milk were examined for tubercle, a positive result being obtained in one instance. Six cases of typhoid fever were notified, two of which were traced to the eating of mussels, but the names of the vendors of the mussels could not be ascertained.

Preston.

Dr. F. A. Sharpe says the pollution of the atmosphere by industrial smoke demands more attention from his committee than it has hitherto received and recommends the appointment of an inspector, trained in boiler management, with the suppression of smoke as his one duty. The beauty of the town revealed in the clear smokeless weather prevailing last Whitsuntide was, he says, a matter of universal comment and delight. The Preston Committee still adopt the over-generous limit of five minutes black smoke in a half hour observation.

Dr. Sharpe gives an interesting account of an unrecognised outbreak of small-pox at a boys' home. On Feb. 16th he was asked to see a girl resident at a laundry and gave his opinion that the patient was suffering from chicken-pox, but he arranged for her removal to the isolation hospital. In a day or two the symptoms became suggestive, and after consultation, Dr. Sharpe decided that the case was one of small-pox. Inquiries showed that the laundry did work for a boys' home, and it was found that at the boys' home there had been 15 cases, the first beginning on Christmas Day and the last on Jan. 12th, of an ailment considered to be chicken-pox. The outbreak at the boys' home infected all but one of eight boys who were not protected by vaccination; it also infected 7 out of 56 boys who were protected by vaccination, and it immunised the boys who were attacked against successful revaccination. All the cases were of a mild type.

Captain R. Finch, the veterinary surgeon, shows that energetic efforts are being made to improve the milk- and meat-supply of Preston. Out of 162 samples of mixed milk examined for tubercle, 19 gave a positive result. In each case the positive sample was followed in order to eliminate the cow or cows giving tuberculous milk. In 16 cases the cows with tuberculous udders were found. At two of the farms there were two cows with tuberculous udders. In the three remaining cases where the tuberculous udders could not be found, animals had been sold off the premises prior to the visit of the veterinary surgeon. There are no Grade A producers in Preston and there is one retailer licensed to sell Certified Milk.

Huddersfield.

Dr. S. G. Moore reports that 323 new houses were erected during 1924. Of these 69 were built by the corporation and 254 by private enterprise. Of these latter 156 were built with State assistance and 174 were suitable for members of the artisan class. Nevertheless Dr. Moore tells us that no one in possession of adequate information can question that at the present time there is grievous lack of dwellings for the people of the borough. Under the scheme for the voluntary notification of pregnancy 568 notifications were received, the total births being 1627. Four "home helps" are employed to take over the household duties in the homes of maternity cases, and two charwomen for the washing and heavy cleaning. Seventy-two samples of milk were examined for tubercle and five were found to be infected.

Halifax.

Dr. Cyril Banks reports that the deaths in Halifax (1511) exceeded the births (1481). Ten cases of typhoid fever were notified with one death. When blood tests were carried out the type of disease was found to be paratyphoid B. Five of the cases occurred at an unusual time of the year—namely, in the first half of May. Similar outbreaks occurred in other parts of the West Riding and the medical officers of health pooled their experiences, but no origin could be assigned and no particular article of diet was incriminated. There were 38 notifications of diphtheria with five deaths. Of the four deaths which occurred in the fever hospital, three of the patients were admitted in a moribund condition, illustrating the need for immediate medical advice for sore throat and the early administration of antitoxin. Dr. Banks is doubtful as to the value of hospital treatment for broncho-pneumonia complicating measles. The outlook when pneumonia has set in is not good. Wards set aside for such cases would remain idle for long periods and the difficulty of securing nurses at short notice is considerable. Influenza reached its height about the middle of March. In this epidemic the illness began suddenly with shivering and pains in the head or back. There was great prostration and in many cases vomiting with or without abdominal pain. Diarrhœa was frequently present. The temperature was high for three or four days and recovery was slow, there being loss of appetite, irritability, loss of temper, and great mental depression. There were 73 deaths recorded, being more than the deaths from all forms of tuberculosis. The suggestion is put forward that certified midwives should wear a badge, in order to distinguish them from untrained women.

Northampton.

Dr. J. Doig McCrindle reports that scarlet fever of a mild type was very prevalent; 1056 cases were notified with six deaths. A table shows that this is the largest number of notifications since 1904, when there were 2224 cases with 40 deaths. The provision of new dwellings does not keep pace with the needs of the people and the unsatisfactory housing conditions continue with little alleviation. The methods of scavenging and refuse disposal are commented on adversely. Only a small portion of the refuse is dealt with at the destructor, which is situated in a populous district and is a frequent cause of complaint. Most of the refuse is deposited on tips, which are a source of nuisance to the surrounding inhabitants. The maternity and children welfare committee obtain the milk which they need from a company with a Grade A licence. The clinical tuberculosis officer, Dr. Stephen Rowland, does not accept the conclusion of the Medical Research Council that phthisis is especially prevalent in the boot and shoe industry, and instances the fact that the phthisis death-rate for Northampton is the same as that of the whole country. In a recent issue it was pointed out, however, that Sheffield has the lowest death-rate from phthisis of the 17 towns with a population exceeding 200,000, in spite of the proneness of the grinder to develop phthisis. One is led to the conclusion that apart from these two trades conditions of life in both Sheffield and Northampton are less liable to produce phthisis than the average conditions of other towns.

Paisley.

Dr. G. V. T. McMichael says the exceptionally high death-rate was due to the excessive prevalence of diseases affecting the respiratory system, such as pneumonia, bronchitis, influenza, measles, and whooping-cough. Arrangements have now been made for Paisley to use the West Renfrewshire Small-pox Hospital, thus enabling the Gockston Hospital to be reserved solely for tuberculosis. Dr. McMichael favours the home treatment of mild cases of scarlet fever, thus leaving hospital accommodation for more serious diseases, such as acute pneumonia, measles, and whooping-cough. Of the 23 maternal deaths associated with childbirth, four were assigned primarily to tuberculosis and three to influenza. The incidence of rickets in Paisley is steadily rising and the rise was specially marked during 1923 and 1924. Dr. McMichael attributes the rise to the distressing economic conditions and the lack of a sufficiency of milk for infants and young children. When the Russell Institute is opened, facilities for the treatment of rickets by artificial sunlight will be available. The Scottish Board of Health has expressed its appreciation of the work of the Barshaw Maternity and Child Welfare Hospital. Dr. McMichael suggests that some public-spirited citizen should come forward and erect a convalescent home for young children. The very large proportion of houses of one or two rooms in Paisley makes the work of the tuberculosis dispensary very difficult. Thus, of 170 notifications of tuberculosis investigated during the year, 111 patients shared a bed, 37 had a bed to themselves but shared a room, and 22 cases had a room to themselves. The housing difficulties are still further brought out by the birth records. Thus there were 420 births in one-roomed houses and 783 in two-roomed houses. Further, there were eight births in one-roomed houses where the parents were lodgers, and 170 births in two-roomed houses where the parents were lodgers. The total number of births during 1924 was 1893.

Warrington.

Dr. G. W. N. Joseph reports that the scheme for obtaining a water-supply from North Wales did not materialise and that a joint committee representing many water authorities in South-West Lancashire, with a representative of the Ministry as chairman, is considering the water requirements of this area, and how such requirements can best be met. There were 13 notifications of encephalitis lethargica with seven deaths. During 1924 66 new houses were built by private enterprise, none by the local authority. One hundred and eight municipal houses, however, are in course of erection and expected to be tenanted during 1925. Many applicants on the waiting-list for houses are purchasing houses erected by private enterprise and taking advantage of the Small Dwellings Acquisition Act. Of the 1662 applicants on the waiting-list there are 735 living in overcrowded houses. The committee have not been able to deal at all with 216 applicants who live outside the borough but are working in Warrington. Ninety-two tenants of corporation houses have received permission to take lodgers, but it is pointed out that all the houses concerned have three bedrooms and that there is no overcrowding. There were 88 samples of milk examined bacteriologically and seven were found to contain tubercle bacilli; five of the cows which were giving tuberculous milk were found and dealt with.

INFECTIOUS DISEASE IN ENGLAND AND WALES DURING THE WEEK ENDED SEPT. 19TH, 1925.

Notifications.—The following cases of infectious disease were notified during the week: Small-pox, 28; scarlet fever, 1888; diphtheria, 953; enteric fever, 91; pneumonia, 578; puerperal fever, 29; cerebro-spinal fever, 3; acute poliomyelitis, 13; acute polio-encephalitis, 1; encephalitis lethargica, 40; dysentery, 12; ophthalmia neonatorum, 94. There were no cases of cholera, plague, or typhus notified during the week.

Deaths.—In the aggregate of great towns, including London, there were 3 deaths from enteric fever, 12 from measles, 9 from scarlet fever, 40 from whooping-cough, 26 from influenza, and 35 from diphtheria. There were 220 deaths of children under 2 years from diarrhœa and enteritis, as compared with 219, 230, 218, and 177 in the preceding weeks. In London itself the deaths from diarrhœa and enteritis in children under 2 years numbered 55, as compared with 43, 38, 40, and 28 in the preceding weeks; there were 7 deaths from diphtheria, 5 from whooping-cough, and 7 from influenza.

Obituary.

JAMES WILLIAM RUSSELL, M.D. CAMB., F.R.C.P. LOND.

James William Russell, whose death occurred on Sept. 20th at Hay Tor, Devonshire, was senior physician to the General Hospital, Birmingham, and joint professor of medicine at the University. Born in 1863 into a well-known Birmingham family closely connected with the medical profession, and educated at the Edgbaston Proprietary School, he went up to Cambridge where he graduated with honours in mathematics and took his M.A. degree in 1890. His medical studies were continued at Queen's College, Birmingham, and Guy's Hospital. Qualifying in 1890 with the M.B., B.Ch. Camb., he obtained the M.D. in 1893 and in the same year became a Member of the Royal College of Physicians of which he was elected a Fellow in 1905. After filling the posts of resident obstetrician and house physician at Guy's Hospital he returned to Birmingham as resident medical officer to the General Hospital in 1891, and 15 months later became assistant physician. He had an unusually long wait before becoming full physician in 1912. For several years he was assistant to the chair of medicine at the University, and subsequently became joint professor of medicine, a post which he held to the time of his death.

The number of consulting posts he held at hospitals in the Midlands testifies to the wide regard paid to his eminence as a physician. He was consulting physician to the Birmingham and Midland Ear and Throat Hospital, the Royal Institution for the Blind, the Midland Counties Asylum, the Sutton Coldfield Cottage Hospital, the Nuneaton Hospital, the Guest Hospital, Dudley, the Smallwood Hospital, Redditch, and the Corbett Hospital, Stourbridge. He served a term on the Council of the Royal College of Physicians and was one of the examiners for the Conjoint Board. Locally, he had a special interest in the Birmingham Medical Benevolent Society.

Although he was not a voluminous writer, he at one time edited the *Birmingham Medical Review*, and was on the editorial board of the *Quarterly Journal of Medicine*. From the fullness of his knowledge he could have contributed much to medical literature, but his characteristic modesty and self-criticism prevented publication until the material had been worked up in great detail and he had subjected it to every possible criticism. It is not sufficiently recognised that he was the first in this country to describe a case of polycythæmia rubra. In a paper published in THE LANCET, Feb. 22nd, 1902, under the title of "An Unexplained Condition of Chronic Cyanosis," he gave the details of a case which he had watched for ten years and of three similar cases recorded by others. He pointed out that the condition was a distinct clinical entity. Osler's well-known paper did not appear until a year later. He was especially interested in nervous diseases and published papers on chorea and epilepsy. In a paper in The Lancet, 1904, he gave the after-history of many cases of gastric ulcer with the object of deciding the criteria for surgical interference. More recently he had been interested in the problems of renal disease, and published in the *Quarterly Journal of Medicine*, January, 1923, a noteworthy study of orthostatic albuminuria by means of graphic records, based upon his Ingleby Lectures delivered in the University of Birmingham the previous year. He reached the conclusion that there was a group of mild kidney lesions which revealed themselves chiefly by the inability of the kidney to bear, without leakage of albumin, the circulatory disturbance brought about by the upright position, and that the orthostatic albuminurias belong to this group though at its mildest extremity. Some further studies on this subject are embodied in a paper which appears elsewhere in this issue of The Lancet.

Apart from his professional interests, he had two great sources of pleasure and recreation—music and mountains. He was a violinist above the average and was one of the chief promoters of the promenade concerts at the Theatre Royal, Birmingham. Even greater was his love of mountains. Initiated by his uncle, Sir Alfred Wills, whose first ascent of the Wetterhorn in 1854 was the beginning of the sporting side of mountaineering, he became in his younger days an expert rock climber. He never made any ice climbs, but except during the war there were few years that he did not visit the Alps. His career was unfortunately interfered with at times by spells of ill-health. During his undergraduate days he was a martyr to asthma, and although this became less after his return to his native town, the demands of a large consulting practice, and especially the added strain during the war of his work at the 1st Southern General Hospital, to which he was attached as major, R.A.M.C.T., were too much for his spare frame; signs of pulmonary tuberculosis showed themselves and necessitated a prolonged rest. Although he recovered he was obliged to restrict his practice and take precautions to avoid the attacks of bronchitis and asthma to which he became subject in recent years.

By the University and General Hospital his loss will be greatly felt, as in an unobtrusive way his devoted service, high ideals, and intellectual capacity did more than he ever realised to guide policies and influence conduct. Among a number of letters we have received one signed "General Practitioner" speaks of unselfishness carried to a fine art and uncompromising devotion to principle. His colleagues and a wide circle of doctors and patients mourn the loss of a courageous and inspiring friend. Dr. Russell was unmarried, and to his two surviving sisters we offer sincere sympathy.

LIVERPOOL PSYCHOLOGICAL SOCIETY.—The third session of this Society will begin on Oct. 6th, when Mr. G. C. Field, the President, will deliver his inaugural address at the University. The proceedings of the Society are of a strictly scientific character, and due prominence is given to the medical and psycho-analytical aspects of the subject; an unusually interesting syllabus has been arranged for the winter. Particulars may be obtained from the Secretary, the University, Liverpool.

DONATIONS AND BEQUESTS.—The governors of the Royal Manchester Children's Hospital have received £1893 from the Manchester and Salford Medical Charities Hospital Sunday Fund, and a legacy of £1000 to endow "the Eliza Entwistle cot."—Mr. John Stephen, of Hessle, Yorks, bequeathed £2000 to the University of Aberdeen, "in memory of a happy boyhood spent in that city," for scholarships, and £2000 "in memory of a happy life spent in my adopted city of Kingston-upon-Hull, for the endowment of university scholarships to boys from Hymers College, Hull."—Towards the £500,000 required for rebuilding part of the Middlesex Hospital, £201,600 has been raised. Recent gifts include £500 from the Hon. John Nivison, £250 from the Middlesex Hospital Club, £105 from Messrs. D. H. Evans and Co., Ltd., £100 from Lady Salomons, and £100 from Messrs. Chappell and Co., Ltd.

Correspondence.

"Audi alteram partem."

THE REGULATION OF NURSING HOMES.

To the Editor of The Lancet.

Sir,—In view of the introduction last February by Mr. Gerald Hurst, K.C., of the Nursing Homes Registration Bill (England) promoted by the College of Nursing, it may be useful to record experience in Johannesburg in which, with its large boarding-house and flats population, the demand for nursing homes is very considerable. It is, of course, essential that such places be properly constructed, equipped, and administered. The writer is unaware, however, of any English standard of arrangements, though a paper containing certain suggestions and plans for high-class private hospitals and clinics was published in The Lancet[1] in 1922 by Sir Holburt Waring, of St. Bartholomew's Hospital. He stated, as regards London, that "for the most part our so-called private hospitals and nursing homes are merely adapted second-class private dwellings," and concluded with the interesting observation:—

> "It has always seemed strange to me in connexion with English people that they are quite prepared, when they have money and wish to take a holiday, to hire two or three rooms in a hotel of the best kind they can afford. But, if it so happens that they are ill and require serious medical or surgical attention, they are often quite prepared to go into what is little better than a third- or fourth-class lodging-house in a back street where the necessary surgical or medical advice and treatment are carried out."

In 1911 Johannesburg took powers to make by-laws as to municipal licensing, water-supply, sanitary requirements, separate accommodation for staff, and mortuary provision. These by-laws, believed to be the first of their kind, were sanctioned in 1914, and their enforcement quickly secured much-needed betterment. In 1922 the Union Government published regulations under the Public Health Act, 1919, S. 135 (2), dealing especially with Government registration, medical inspection, and the keeping of a detailed register of patients. Thereafter, at the request of the Government, the writer undertook a systematic inspection of nursing homes, some 37 in number, under systematised headings. No responsibility was, however, accepted as to the conduct of these places.

In the course of inquiry as to sanitary conveniences, prompted by disastrous personal experience many years ago at the hands of a certificated nurse, special attention was directed to the cleansing of bed-pans. In only five of the homes was satisfactory slop-sink and sluice provision made. In several cases it was admitted by highly trained English and South African nurses that the bath was used for cleansing and rinsing purposes. This is obviously and specially likely to occur where the water-closet is situated alongside the bath. In other respects the results of inspection were rather surprisingly satisfactory. The replacement of numerous adapted "second-class private dwellings" (usually small bungalows) by buildings of modern design and equipment may in some cases be preferable; but this, like technical equipment, quality of cooking, standard of nursing, attendance, and tariffs, is largely a question of demand, supply, and competition, which can hardly be dealt with by regulation. Nursing homes should certainly be in a state of good structural repair, possess a sufficiency of private open space or garden, be provided with water carriage wherever practicable, and, without any exception, possess adequate and approved slop-sink and sluice provision on each nursing floor. Sufficient and, in the larger homes, separate bathing and sanitary conveniences should be available for patients and staff; in no nursing home should a sanitary convenience be permitted in a bathroom. Licensees should be supplied with, and produce on demand, an authorised schedule of the number of beds permitted in each room, and should not be overburdened with record-keeping, if only to induce them to keep their essential register with reasonable diligence and accuracy. In regard to *standard of nursing*, 54 per cent. of the staff were certificated generally and in midwifery, 15 per cent. in midwifery only, 9 per cent. were probationers, and 23 per cent. were untrained.

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[1] The Lancet, 1922, ii., 697.

As a result of this inspection, the existing 1915 municipal by-laws were revoked to be replaced by the regulations which I here append.

I am, Sir, yours faithfully,
CHARLES PORTER, M.D. Irel., D.P.H. Camb.,
Medical Officer of Health, Johannesburg.
August 1st, 1925.

NEW REGULATIONS.

57. 1. No premises shall be licensed as a private hospital or nursing home if such premises are being used, or are intended to be used, for any other purpose ; nor

(1) Unless the buildings, including out-offices, (*a*) are in good repair and in a cleanly and wholesome condition ; (*b*) possess a sufficient supply of good water, free from liability to pollution ; (*c*) are, where sewerage is available, connected therewith ; (*d*) have within the curtilage such garden area or open space as may in the circumstances be reasonable.

(2) Unless there be provided (*a*) not less than 100 square feet floor space and 1200 cubic feet of free air-space for all infectious and serious operation cases, and not less than 75 square feet and 800 cubic feet of free air space for all other cases ; (*b*) adequate accommodation for nursing and attendants separate from the accommodation for patients ; (*c*) water-closets in the proportion of 1 to every 15 beds for patients, or, when sewerage is not available, pail-closets in the proportion of 1 to every 8 such beds ; (*d*) where the number of beds for patients exceeds 10, separate closet accommodation for the staff in the same proportion as in par. (*c*) hereof ; (*e*) upon every floor upon which patients will be accommodated, an approved slop-sink or " sluice " with water-tap, flushing cistern, flushing rim, and hot and cold water laid on, and arrangements for the satisfactory disposal of sewage therefrom ; (*f*) separate closet accommodation for any native or natives resident or employed on the premises ; (*g*) slipper-baths with hot and cold water laid on in the proportion of 1 bath for every 15 beds for patients, and, where the number of such beds exceed 15, separate bath accommodation for the staff, no closet or slop-sink or " sluice " to be constructed or permitted to remain in any bathroom ; (*h*) a suitable outside room in connexion with such private hospital or nursing home for use as a mortuary chamber.

2. No licensee of a private hospital or nursing home shall fail to display prominently on the door of each room intended for the accommodation of patients the number permissible in such room in terms of Subsection 1 (2) hereof.

58. No licensee of a private hospital or nursing home shall himself or by his servant or agent contravene or fail to comply with or to maintain any of the conditions, provisions, or requirements specified in by-law 57 hereof.

"SMALARINA" IN MALARIA.

To the Editor of THE LANCET.

SIR,—Prof. Cremonese's monograph was not unknown to us, but we must confess to some difficulty in following his pathology and in admitting some of his suppositions. The patients of whom we wrote, when placed on quinine and arsenic treatment, made the *usual* progress—no worse, no better, than the numerous patients suffering from malaria admitted to the Hospital for Tropical Diseases during the past several years. These patients appear to us to afford adequate control for the purpose of clinical judgment. " Smalarina " may or may not be of use as *an aid* to quinine ; our few cases were insufficient perhaps wherefrom to judge, but we did not find any beneficial result from its use.

Anyone interested in this subject might refer to " Smalarina Cremonese " published by the Bureau pour l'Encouragement a l'Emploi de la Quinine, Amsterdam.—We are, Sir, yours faithfully,

G. C. LOW.
A. L. GREGG.
Brook-street, Grosvenor-square, W., Sept. 29th, 1925.

PERSISTENT DIARRHŒA IN PHTHISIS.

To the Editor of THE LANCET.

SIR,—In your issue of Sept. 26th Dr. H. de Carle Woodcock draws attention to the persistent diarrhœa which is such a serious complication of phthisis. Apart from actual tuberculous enteritis, I believe that the usual cause is the achlorhydria which is a very frequent sequel to phthisis. Permin[1] gave test-meals in 658 cases and found that free hydrochloric acid was absent in 23 per cent. in the " first stage," 34 per cent. in the " second stage," 47 per cent. in the " third stage," and in 75 per cent. of those who died within six months of the examination. It is a familiar fact that achlorhydria is the most common cause of chronic and recurrent diarrhœa in non-tuberculous patients, and that this can be rapidly and completely cured by the use of hydrochloric acid. Similarly, the rational treatment of the diarrhœa of phthisis is to administer the acid in adequate doses. The large dose required in such conditions as Addison's anæmia is unnecessary. As a rule, between 30 and 60 minims taken with each meal is sufficient to control the diarrhœa ; this can be given as a medicine in 2 oz. of water, or more agreeably as a beverage in a glass of water with the addition of sugar and the juice of an orange or a lemon.

I am, Sir, yours faithfully,
ARTHUR F. HURST.
New Lodge Clinic, Windsor Forest, Sept. 28th, 1925.

ROYAL COLLEGE OF SURGEONS OF ENGLAND: PROPOSED NEW CHARTER.

To the Editor of THE LANCET.

SIR,—The annual meeting of Fellows and Members on Nov. 19th next will be one of most unusual interest, as the College Council has decided to lay before it in their annual report the exact terms of the petition and of the proposed new charter which the said Council intends to lay before H.M. Privy Council at a date unpublished. I presume that this date will be subsequent to Nov. 19th, so that the Fellows and Members assembled on Nov. 19th can give the Council their views on the suggested admission of women to the same status as men, whether Fellows, Members, or Licentiates in Dental Surgery, and on other innovations contained in the new charter.

My Society will present to the meeting on Nov. 19th a resolution suggesting that advantage be taken to insert a clause giving Members direct representation on the Council of the College. This will, once for all, restore to the Members the position of which they were robbed by the iniquitous charter of 1843. Presidents of the College have expressed regret, more than once, that it is only by obtaining a new charter such justice could be done, and that this is a very expensive process. Now is the time to prove if this remark was sincere. It will be an opportunity which Members and democratic Fellows have been waiting for since my Society was founded in 1894 ; indeed, since the establishment of the previous Association in 1884.

You may be sure there will be a *very large* attendance in the College on Nov. 19th next. The theatre was crammed to the utmost in November, 1908, when the proposed admission of women to the examinations of the College was debated and the results of a postcard vote made known. This proposal was, I might add, negatived by a majority, but the Council, heedless of this verdict, soon after permitted women to come up for examinations, but having no share whatever in the management of the College. This restriction the Council now proposes under the new charter to remove, *but not to take a poll* of the Fellows and Members.

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[1] G. E. Permin: Internat. Beitr. z. Path. u. Ther. d. Ernährungsstör, I., Hft. 2.

This, however, is not the only "shot in our locker." We have been assured by the clerk of H.M. Privy Council that when the College Council's petition and proposed charter arrive before *his* Council, "an opportunity will be afforded to persons interested to bring a counter-petition." My Society will not fail to do so, and we are already taking steps to secure legal aid of the highest class to present ably our just cause and to support strongly a counter-petition on behalf of the 17,000 Members.

I am, Sir, yours faithfully,

SIDNEY C. LAWRENCE, M.R.C.S. Eng.,

Hon. Sec. of the Society of Members of the Royal College of Surgeons of England.

Sept. 21st, 1925.

RHEUMATISM AND RADIO-ACTIVE WATER.

To the Editor of THE LANCET.

SIR,—I have read with interest the figures given in the Ministry of Health's report on the prevalence of rheumatism. Treatment with radium emanations is the basis of successful treatment at all the famous spas in the world, and I personally consider that an immediate investigation into the possibilities of a national treatment of rheumatic patients by radio-active water would be of more practical value than the issuing of reports. Radio-active waters in these days are easy to produce; in fact, British manufacturers have now achieved the means of producing a water in the ordinary household which is considerably more potent in radio-activity than those of any of the continental spas and answering to the severest tests of the Curie Institute of France.

I am, Sir, yours faithfully,

E. DUNBAR TOWNROE, M.R.C.S.Eng., D.P.H.

Sloane-street, S.W., Sept. 23rd, 1925.

LUMINAL AND THE TREATMENT OF EPILEPTIC FITS OCCURRING AT ADOLESCENCE.

To the Editor of THE LANCET.

SIR,—The outlook of young people who have led healthy lives till they reach the age of early manhood or womanhood, and who then start having epileptic fits has been little improved by the wholesale drugging and dulling effects of maximum doses of bromides with attendant gastric disturbances. The trial of luminal in such cases seems indicated from the accumulating evidence, and the following two cases of epileptic fits occurring at adolescence may be of clinical interest.

Mr. K. I., aged 28, healthy history till age of 18, started having fits, at first of mild character, occurring once or twice a week. The severity and number of the fits increased till they became of daily occurrence, more especially during the early part of the morning. He was put on maximum doses of bromide, which did not, however, check the fits. He became very morose and depressed. On Dec. 28th, 1924, he was started on luminal, $1\frac{1}{2}$ gr., twice daily. He has had no fits since that date, and except for feeling a little drowsy for the first few days he now leads a normal existence, and is in fact a different man.

Miss V. M., aged 27, a sport-loving girl, did war work and had a nervous breakdown owing to strain. A legacy of typical epileptic fits was the sequel. These fits were more frequent and severe just before her menstrual flow every month, the latter becoming irregular. She became very apathetic and dull. Bromide in maximum doses combined with salt-free diet had no effect on the fits. Four months ago she was given luminal, $1\frac{1}{2}$ gr., twice daily; a fortnight after she had a slight "giddy turn" just when her menstrual period started, since when she has had no return of fits, and now is able to take interest in her work.

The similarity of age and onset of the above cases and the cessation of fits with luminal and the absence of after-effects would seem to make the more extensive use of this drug in similar cases worthy of trial, more especially in general practice.

I am, Sir, yours faithfully,

O. G. MISQUITH, M.A. Camb., M.R.C.S. Eng.

Chandler's Ford, near Southampton, Sept. 26th, 1925.

A DISCLAIMER.

To the Editor of THE LANCET.

SIR,—Will you allow us through the columns of THE LANCET to disclaim all responsibility for paragraphs which have appeared in the public local press concerning us? Not only have such references been unsought by us, but they have caused us great distress, and have in every way been actively opposed by us.—We are, Sir, yours faithfully,

D. JUSTIN DAVIES.
Leicester, Sept. 28th, 1925. LUCY S. DAVIES.

THE DENTAL EXHIBITION.

THE International Exhibition, held at the Imperial Institute, South Kensington, from Sept. 28th to Oct. 2nd, again reflects the mechanical ingenuity which has been applied to dentistry. It is hardly the fault of inventors that striking novelties are far to seek amongst the maze of machines, appliances, and preparations.

The Pepsodent Toothpaste Company, of 42, Southwark Bridge-road, S.E. 1, show their Decoater tooth-brush, which is smaller and more efficient than most popular models; but the design of tooth-brushes is worth far more thought than has been given to it. Amongst tooth-pastes shown are the well-known Kolynos, Euthymol, and Crown brands. Each has undoubted merits which hardly require recapitulation; amongst those of the last is said to be a taste of fruit which makes its use less irksome to ladies and children. There is also exhibited a French dentifrice called Sanogyl, which is used in pyorrhœa and contains novarsenobenzol. Its virtue is supposed to lie in action against specific spirochætes causing pyorrhœa.

Local anæsthetics naturally receive much prominence. W. R. Black, of Vere-street, Birmingham, shows a new preparation called Isocaine, in addition to his well-known product Nopaine. Isocaine is said to be seven times less toxic than cocaine, without being irritant. C. J. Plucknett and Co., of 29, Poland-street, W. 1, exhibit their Sanpeine, which has no cocaine in it, and the Amalgamated Dental Co. have a cocaine preparation called Antipain, which has been in use for ten years. Similarly well established is Patterson's Local Anæsthetic, of which steadily increasing sales are reported by the Palatine Dental Manufacturing Co., of 5, High-street, Manchester, and Anodoon, 20 years old, which is prepared by the Glasgow Dental Depôt, Ltd. This firm also shows useful flasks and flask clamps and a satisfactory form of articulator. The Hoffman-La Roche Chemical Works, Idol-lane, E.C. 3, strongly recommend their sedative, analgesic and hypnotic, Allonal; it is a barbituric acid derivative, intended to be given before and after operations.

Several firms, including the Palatine Dental Manufacturing Co., exhibit a new preparation named Nugum, which is "a plastic coral for perfectly natural dentures," and can be vulcanised like rubber in an ordinary vulcaniser. Of artificial teeth there are excellent displays by many firms, including the Dental Manufacturing Co., Courtin and the International Tooth Co., and the S. S. White Co.—all of London. Dentures of gold-covered vulcanite are shown by the Gold-Sealed Denture Process, Ltd., 9, Golden-square, W. 1. Many firms show beautifully finished instruments, amongst which may be mentioned the Rayway Dental Unit of Norman Rayne, Ltd., 48, New Cavendish-street, W. 1. Gould and Co., of Agol House, Mount Pleasant, Liverpool, show their Agol equipment and preparations, and the Amalgamated Dental Co. have efficient gas-and-oxygen apparatus, and a new adjustable spot-lamp. They also exhibit their excellent Solila hypodermic needles, made of rustless steel, and a new small adjustable gag. Cottrell and Co., of 15, Charlotte-street, W. 1, demonstrate an automatic rubber packing and wax dispersing apparatus and Dr. Oberlander's process of enamelling dentures.

Baillière, Tindall and Cox, who publish the *Dental Surgeon*, display books on dentistry; so also does Henry Kimpton, of 263, High Holborn, W.C. 1. Amongst smaller items are the Lysepticol mouth-wash tablets, of the Midland Dental Manufacturing Co., Birmingham; the chlorine antiseptic, Chloramine, of W. R. Black, and the new iodine solution, Presoiod, sold by Lionel Cooper, 14, Henrietta-street, W.C. 2. A small cheap sterilising lamp, burning solid fuel, which is made by Francis Lepper and Co., of 55, Great Marlborough-street, W. 1, has found many buyers. Last, but far from least in helpfulness, is the glass of hot virolised milk provided for visitors.

Medical News.

Royal College of Surgeons of England.—Demonstrations of specimens in the Museum will be given at 5 P.M. during October and November in the theatre of the College in Lincoln's Inn-fields, as follows: By Prof. Sir Arthur Keith: Friday, Oct. 16th, Specimens Illustrating the Pathological Anatomy of Acromegaly; Oct. 23rd, Preparations and Models to Illustrate the Mechanism of the Internal Ear; Oct. 30th, Preparations and Dissections to Illustrate the Evolution of the Human Mechanism of Hearing; Nov. 6th, Exhibition of Microscopical Preparations made from Recent Cases of Intestinal Stasis. By Mr. Shattock: Monday, Oct. 19th, Lips and Tongue; Oct. 26th, Cysts; Nov. 2nd, Some Bone Tumours. The demonstrations are open to advanced students and medical practitioners.

Chelsea Clinical Society.—The annual dinner of the society will be held at the Café Royal, Regent-street, W., on Tuesday, Oct. 20th, at 7.30 P.M.

Pharmaceutical Society of Great Britain.—On the occasion of the opening of the eighty-fourth session of the School of Pharmacy at 17, Bloomsbury-square, London, W.C., on Wednesday, Oct. 7th, Prof. Winifred C. Cullis will deliver the inaugural sessional address, and the Pereira medal will be presented.

St. Thomas's Hospital Medical School.—The old students' dinner will take place at the Hotel Victoria, Northumberland-avenue, W.C., on Friday, Oct. 30th, at 7.30 P.M. The chair will be taken by Mr. Samuel Osborn. On Monday, Nov. 2nd, at noon, H.R.H. the Duke of York will lay the foundation-stone of the College House extension. The ground and first floors of this building, which is being erected opposite the hospital in Lambeth Palace-road, will house the students' club premises, whilst the upper four floors will provide resident accommodation for some 60 students, in addition to members of the resident staff of the hospital.—The following scholarships have been awarded by the school: Entrance Arts Scholarships, 1925 (value £50), Mr. A. G. Sanders, St. Paul's School, West Kensington; (value £50), Mr. J. F. E. Bloss, Monkton Combe, Bath. Entrance Science Scholarships, 1925 (value £150), Mr. K. M. Robertson, Eltham College; (value £60), Mr. D. O. Clark, Eltham College. The William Tite Scholarship, 1925 (value £25), Mr. A. M. Easton, Whitgift Grammar School, Croydon.

Post-Graduate Course at St. Mary's Hospital. A series of lectures will be given at St. Mary's Hospital over the present week-end, starting on Saturday, Oct. 3rd at 11 A.M. The course will be open to all practitioners without fee, and the following lectures will be given: Saturday, 11 A.M., Mr. C. W. G. Bryan: The Management of Common Forms of Urinary Obstruction; noon, Mr. S. Maynard Smith: The Differential Diagnosis of Gall-Stones; 2.30 P.M., Mr. T. G. Stevens: Hæmorrhagic Ovarian Cysts, a Common Cause of Pelvic Pain; 3.45 P.M., Dr. C. M. Wilson: The Patient's Point of View in Treatment (with cases). On Sunday, 11 A.M., Mr. Zachary Cope: Minor Surgery in General Practice; noon, Prof. B. J. Collingwood: Some Applications of Physiology in Practice. On Monday, 10 A.M., Mr. Warren Low: Clinical Aspects of Malignant Disease of the Colon; 10.45 A.M., Prof. Langmead: Overlooked Causes of Fever in Children; noon, Mr. Aleck W. Bourne: Clinical Types in Gynæcology; 2.30 P.M., Sir William Willcox: Chronic Toxæmia, its Recognition and Treatment; 3.45 P.M., Mr. Duncan Fitzwilliams: Lecture and Demonstrations on Cancer of the Breast.

Caledonian Medical Society.—The fortieth annual meeting and dinner of this society will be held at the Central Station Hotel, Glasgow, on Friday, Oct. 9th, under the presidency of Dr. Neil T. Kerr, of Hartwood.

Hunterian Society.—The presidential address to the society will be given by Dr. F. Howard Humphris at a dinner meeting in Simpson's Restaurant, Cheapside, E.C. 2, on the subject of Light. The date of the meeting is Oct. 19th, at 7.30 P.M., and not Oct. 12th as announced in the society's calendar.

Charing Cross Hospital Medical School.—The annual dinner of past and present students will be held in Gatti's Restaurant, Strand (entrance, King William-street), on Monday, Oct. 5th, at 7 for 7.30 P.M. Dr. W. J. Fenton will be in the chair. The distribution of prizes to students by Sir Herbert Waterhouse will take place on the afternoon of the same day at 3.30 in the out-patients' hall of the hospital.

Harveian Society of London.—The subject selected for the Buckston Browne prize is the Ætiology of High Blood Pressure and of the Respiratory Phenomena Associated with High Blood Pressure and Chronic Nephritis. The prize consists of a medal, together with the sum of £50, and it is open for competition to any member of the medical profession registered in the British Isles or Dominions, under 45 years of age. Further particulars may be seen in our advertisement columns.

British Science Guild.—The first annual Norman Lockyer Lecture, established by the British Science Guild as a means of periodically directing the attention of the public to the influence of science upon human progress, will be given by Sir Oliver Lodge, F.R.S., on the Link Between Matter and Matter, and the lecture will be held on Monday, Nov. 16th, at 4 P.M., in the Hall of the Goldsmiths' Company (by permission of the Master and Court of Assistants of the Company), Lord Askwith, President of the Guild, in the chair. Tickets of admission may be obtained on application to the Secretary, British Science Guild, 6, John-street, Adelphi, London, W.C. 2.

Medical Defence Union.—The annual general meeting of the Medical Defence Union was held at 49, Bedford-square, London, on Sept. 25th. Mr. Walter G. Spencer, the President, in moving the adoption of the annual report of the Council for the year 1924–25, said that the report was certainly one of the most satisfactory and successful which had ever been issued. The increase of members during the past two or three years was quite unprecedented, and no doubt this was largely due to the fact that the teachers in the medical schools were now making a point of telling the newly-qualified to join one or other of the defence societies. Mr. F. C. Larkin, Mr. D. Drew, and Dr. V. A. Jaynes were unanimously re-elected members of the Council.

National Hospital for the Paralysed and Epileptic.—A post-graduate course will be held at the Hospital, Queen-square, Bloomsbury, W.C., from Oct. 5th to Nov. 27th. The course will consist of the following subjects: (1) Out-patient clinics, Mondays, Tuesdays, Thursdays, and Fridays, 2 P.M.; (2) clinical lectures and demonstrations on the same days at 3.30 P.M.; (3) lectures on the anatomy and physiology of the nervous system (if sufficient applicants), Mondays, 12 noon; (4) lectures on the pathology of the nervous system, Thursdays, 12 noon; (5) clinical demonstrations on methods of examination (if sufficient applicants), Tuesdays and Fridays, 10 A.M. A syllabus and further particulars of the course may be obtained from the secretary of the hospital.

Royal Institute of Public Health.—A course of lectures on Preventable Diseases will be delivered in the Lecture Hall of the Institute, 37, Russell-square, London, W.C. 1, at 4 P.M., on Wednesdays from Oct. 14th to Dec. 16th. Colonel S. Lyle Cummins, David Davies Professor of Tuberculosis, University College of South Wales and Monmouth, will deliver the first lecture on the Prevention and Arrest of Tuberculosis, on Oct. 14th, with Lieut.-Colonel Cuthbert James, M.P., in the chair. Whilst these lectures are intended primarily for the Fellows and Members of the Institute, all others, men and women, interested in medico-sociological problems are cordially invited to attend. The Harben Lectures will be given by Prof. J. C. G. Ledingham, F.R.S., on Current Problems in Bacteriology and Immunology, and their bearing on Public Health Effort, on Dec. 9th, 10th, and 11th, at 5 P.M. A copy of the syllabus may be obtained from Dr. E. W. Hope or Dr. T. N. Kelynack, hon. secretaries, at the Institute.

THE winter session of the James Mackenzie Institute for Clinical Research, St. Andrews, will open on Tuesday, Oct. 6th, at 4 P.M.

THE resignation is reported of Sir Henry Gray from the chief surgeoncy of the Royal Victoria Hospital, Montreal.

Dr. Basil Graves, who has recently been appointed surgeon to the St. Paul's Eye Hospital, Liverpool, has been given leave to enable him to deliver a series of advanced clinical courses on Special Methods and Principles of Technique employed in Microscopy of the Living Eye, at the Bellevue Department of Ophthalmology, New York University.

QUEEN'S UNIVERSITY (BELFAST) CLUB, LONDON.—The annual business meeting and autumn dinner of the club will be held at 7 and 8 P.M., respectively, on Thursday, Oct. 15th, at the Connaught Rooms, Great Queen-street, W.C. 2. Members of the University wishing to join the club should communicate with the Honorary Secretaries at 132, Harley-street, W.

CONFERENCE ON LIBRARIES.—The Conference held by the Association of Special Libraries and Information Bureaux at Oxford was attended by over 200 delegates, representing many countries. It was stated that there are over 25,000 scientific periodicals, and it is obvious that organisation is needed. Miss A. L. Lawrence, of the British Medical Association, discussed the coördination of medical information, and Dr. Kentish Wright, of the Ministry of Health, gave particulars of the intelligence service at the Ministry.

WHITEHAVEN AND WEST CUMBERLAND INFIRMARY. Some three or four years ago Whitehaven Castle, one of the seats of the Earl of Lonsdale, was bought privately and, together with £20,000 to cover the cost of alterations, presented to the governors of the Whitehaven and West Cumberland Infirmary. The alterations are now nearly completed, and the new hospital will shortly be opened by Princess Mary. When Sir John Lowther bought the building in 1675 from Sir George Fletcher it was called Flatt House, but was subsequently re-edified and re-named Whitehaven Castle.

ROYAL VICTORIA HOSPITAL, BELFAST.—It is estimated that the large extensions now in progress, portions of which are already completed and in working order, will cost approximately £125,000. Twenty years ago the expenditure of the hospital, which is the medical school of the University, was £14,000; last year it was £53,000; this year it will be £63,000. The income is now inadequate to the extent of over £10,000, and an offer has been made of a contribution of £1000 conditional upon nine similar contributions. The extensions comprise three additional wards to hold 80 beds, a six-floored nurses' home, which will house the whole of the nursing staff, and two new clinical theatres. An entire floor is being adapted as a dental clinic.

Appointments.

CRAIB, M., M.D., Ch.B., has been appointed Resident Medical Officer for Frere Hospital, East London, South Africa.

GRAVES, B., M.R.C.S., L.R.C.P. Lond., Surgeon to St. Paul's Eye Hospital, Liverpool.

O'CONNOR, BRYAN V., M.R.C.S. Eng., L.R.C.P. Lond., Resident Medical Officer, General Hospital, Jersey.

PLATT, H., M.D., M.S. Lond., F.R.C.S. Eng., Consulting Orthopædic Surgeon to the Devonshire Hospital, Buxton.

TROUP, G., M.D. Aberd., D.P.H., Medical Superintendent, Willesden Municipal Hospital.

Ashton-under-Lyne Board of Guardians: WHITE, L., M.R.C.S., L.R.C.P. Lond., Medical Superintendent, non-resident; RALPHS, F. G., M.B., Ch.B. Manch., Surgeon, non-resident; and EVANS, G. I., Assistant Medical Officer, resident.

Vacancies.

For further information refer to the advertisement columns.

Belgrave Hospital for Children, 1, Clapham-road, S.W.—H.S. and Asst. H.P. Each at rate of £100. Also Asst. S. 50 guineas.

Bermondsey Infirmary, Lower-road, Rotherhithe, S.E.—Jun. Asst. M.O. £400.

Birmingham, City Mental Hospital.—Asst. M.O. £350.

Brighton, Royal Sussex County Hospital.—H.S. £150. Also Surg. Clin. Asst.

Cambridge, Addenbrooke's Hospital.—Cas. O. and Res. Anæsthetist. At rate of £130.

Cardiff Royal Infirmary.—Ophth. H.S. At rate of £50.

Central London Throat, Nose, and Ear Hospital, Gray's Inn-road, W.C.—Hon. Asst. Out-patient Registrar.

Delhi, India, Lady Hardinge Medical College and Hospital.—Radiologist. Rs.750.

Holland County and Boston Borough Education Committee.—Dent. S. £450.

Hospital for Consumption and Diseases of the Chest, Brompton, S.W.—H.P. At rate of £50.

Hospital of St. John and St. Elizabeth, 40, Grove End-road, N.W.—H.P. and H.S. At rate of £100 and £75 respectively.

Hull City Education Committee.—Asst. Sch. M.O. £600.

Leicester Royal Infirmary.—Second Res. Anæsthetist. At rate of £200.

Lucknow University.—Prof. of Surgery. Rs.1200–50–1400.

Manchester Babies' Hospital, Burnage-lane, Levenshulme.—Two Hon. Phys.

Manchester Royal Infirmary.—Res. M.O. and Asst. M.O. At rate of £200 and £100 respectively.

National Hospital for the Paralysed and Epileptic, Queen-square, W.C.—Res. M.O. £200.

Northern Ireland Ministry of Home Affairs.—Med. Inspector. £500.

Paddington Green Children's Hospital, W.—H.P. and H.S. Each at rate of £150.

Portsmouth Royal Hospital.—Cas. O. At rate of £100.

Renfrew County.—Asst. Tub. O. £600.

Royal Chest Hospital, City-road, E.C.—Res. M.O. and H.P. At rate of £150 and £100 respectively. Also Phys. to Outpatients. £50.

Royal Free Hospital, Gray's Inn-road, W.C.—Sen. Res. M.O. £200.

Royal National Orthopædic Hospital, 234, Great Portland-street, W.—Registrar. 100 guineas.

Royal Northern Hospital, Holloway, N.—H.P. and H.S. At rate of £70. Also P.

Seychelles Government.—Asst. M.O. and Res. S. Rs.6500.

Southend-on-Sea County Borough.—Asst. M.O. £600.

Stockport Infirmary.—Sen. H.S. £250.

Winchester, Royal Hampshire County Hospital.—H.P. £150.

The Chief Inspector of Factories, Home Office, London, S.W., announces the following vacant appointments for Certifying Factory Surgeons: Looe (Cornwall), Shrewsbury (Salop). and Wylam-on-Tyne (Northumberland).

Births, Marriages, and Deaths.

BIRTHS.

ANDERSON.—On Sept. 24th, at Albyn-terrace, Aberdeen, the wife of William Anderson, F.R.C.S., of a son.

CROSSMAN.—On Sept. 16th, the wife of Dr. Francis Ward Crossman, Whites Hill, Hambrook, Glos., of a son.

DINGLEY.—On Sept. 25th, the wife of J. R. Dingley, M.B., B.S., Robertsbridge, Sussex, of a daughter.

MOLLAN.—On Sept. 23rd, at Staunton Lodge, Gosport, the wife of Captain F. R. H. Mollan, M.C., R.A.M.C., of a son.

VERCOE.—On Sept. 24th, at Old Court, Ealing, the wife of R. H. Vercoe, D.P.H., M.O.H. Chelmsford, of a son.

MARRIAGES.

MCCREA—WILLOCK.—On Sept. 25th, quietly, at Ottery St. Mary, Devon, Edward D'Arcy McCrea, F.R.C.S.I., M.Ch. Dub., to Edith Florence Willock, F.R.C.S.I., only daughter of Mr. and Mrs. W. A. Willock, Green Bushes, Budleigh Salterton.

MACKINNON—BAGNALL.—On Sept. 24th, at St. Mary's, Hammersmith-road, West Kensington, Archibald Donald Mackinnon, C.M.G., M.D., Kyleakin, Isle of Skye, to Sylvia Joan, widow of Lieut.-Colonel C. E. Bagnall.

DEATHS.

BROWN.—On Sept. 26th, at Preston Park, Brighton, Thomas Lloyd Brown, M.R.C.S., of Stonecroft, Cuckfield.

DAVIES.—On Sept. 23rd, at East Cliff Cottage, Bournemouth, Dr. William Morriston Davies, aged 83.

FOX.—On Sept. 27th, at Bradford-street, Walsall, George Martin Fox, M.D., D.P.H., J.P., in his 61st year.

KIRKNESS.—On Sept. 19th, at The Haven, Pembury, Tunbridge Wells, suddenly, of pneumonia following influenza, William Ronald Kirkness, M.R.C.S., L.R.C.P., eldest son of the late William Kirkness, of Falmouth, and of Mrs. Kirkness, Haslemere, Surrey.

THOMAS.—On Sept. 25th, suddenly, Hugh Mortimer Thomas, M.R.C.S., L.R.C.P. Lond., Tower Hill, Fishguard, aged 52.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Notes, Comments, and Abstracts.

THE DEATHS OF MERCHANT SEAMEN IN 1923.

BY W. E. HOME, M.D., B.SC., D.P.H.,
M.R.C.P. EDIN.,
FLEET SURGEON, R.N. (RETIRED).

THE deaths of merchant seamen in 1923 are recorded in the Board of Trade's "Return of the Shipping Casualties to and Deaths on Vessels Registered in the United Kingdom" recently issued. The figures tabulated below may be compared with those previously published [1] for 1921 and 1922, but there is added a line, "equivalent for a single death," which correlates the death-rate per 1000 with the number of persons on which the figures are based, showing by how much any individual death affects the rate per 1000 in any group, such as the Lascars. The total numbers of men serving amongst whom the deaths occurred is once again not given in the report, but has been kindly supplied to me by the Board of Trade. It is only approximate, but no more accurate information is available. The same method of compilation has been used as before and it is probable that the errors are roughly constant from year to year. The death-rate for 167,794 British seamen in 1923 was lower than in 1922, and also lower in each of the three groups—alcohol, diseases, and accidents. This year there were 35 suicides, 32 men were lost through drink, 188 by casualties to their ships, and 362 by disease. There were 50 deaths from pneumonia, 29 from tuberculosis (a decrease of 17), 25 from malaria, and 19 from enteric fever. The 55,935 Lascars form the next largest group in the mercantile marine, and their gross death-rate of 8·01 is higher than in 1922, the main increase being in deaths from disease. There were 17 suicides; none were lost through drink, but 135 in casualties to their ships (73 in the *Okara*). Fifty-six died of pneumonia and 42 of tubercle, to which diseases they are more susceptible as a group. They also suffered more through casualties to ships and accidents on board, particularly from falls down hatchways and "missing at sea," but much less from accidents on shore, in which drink is apt to play a part. Foreign seamen (11,262), a smaller group, suffer most from accidents on board, tubercle, and circulatory and digestive diseases. In the whole mercantile marine there were no deaths in 1923 from plague, which was rather a triumph; but there was an increase of 7 from beri-beri and 21 from pneumonia. There were 14 fewer from tubercle; cancer deaths were at the same rate in British and Lascar seamen, and there were fewer accidents. It must be remembered, however, that these death-rates are only approximate, and that periods of irregular employment increase accidents, but, owing to the method of preparation of this return, will lower the apparent death-rates. In sailing ships (2156 men) the fatal accident-rate was 14·2, against 2·7 in steam (five times as high), and there were no deaths from either alcohol or disease. In the Royal Navy in 1922 accidents, pneumonia, and tubercle were the chief causes of deaths, and there was less malaria, enteric fever, and circulatory system disease than amongst British merchant seamen. The relative ages in the two groups unfortunately cannot be compared.

In 1924 the Royal Sanitary Institute represented to the Ministry of Health and to the Board of Trade that this classification of diseases was antiquated and should be remodelled, and that the compilation of death statistics and the care of the health of the men of the merchant service should be given in charge to the Ministry of Health, as the Board of Trade was not specially organised for this duty. The Prime Minister stated in March, three months before this return appeared, that the Board of Trade was "in close touch with the Ministry of Health on all matters affecting the health of seamen." Evidence of the effect of this "close touch" is not apparent in this return. The Board of Trade may have been in intimate association with the Ministry's medical advisers, but has presumably been unable to assimilate the wealth of scientific information they have offered. Tuberculosis is still not classified as an infectious disease, and the Board has not yet learned that figures of deaths are of little practical interest unless accompanied by a statement of the numbers of the population amongst whom they occurred. The shortest of conferences with the Ministry should have conveyed this axiom. The report is intended to "furnish an approximate basis for estimating the variations in the extent of the risks from period to period," but how can anybody estimate the variations if he is merely told that in one year there were 946 deaths and 860 in another? It is necessary to know how many British seamen there were in the service in each of these years. The President of the Board of Trade said in March that the Board had under consideration the

DEATHS IN THE MERCHANT MARINE IN 1923.

—	Numbers of deaths.			Per 1000.				
"First crews," total	British, 167,794.	Foreign, 11,262.	Lascar, 55,935.	British, 1922.	British.	Foreign.	Lascar.	Royal Navy, 1922.
Equivalent of a single death ..	—	—	—	0·005	0·006	0·089	0·018	0·0103
Cholera	—	—	3	0·015	—	—	0·02	—
Dysentery	10	—	5	0·04	0·06	—	0·09	—
Enteric	19	—	5	0·11	0·11	—	0·09	0·04
Influenza	3	—	—	0·06	0·02	—	—	0·12
Malaria	25	—	12	0·16	0·15	—	0·21	0·02
Plague	—	—	—	0·005	—	—	—	—
Pneumonia	50	3	56	0·25	0·30	0·26	1·00	0·25
Small-pox	4	—	2	0·02	0·02	—	0·04	—
Tuberculosis (all)..	29	8	42	0·28	0·17	0·71	0·75	0·37
Venereal diseases..	—	—	—	—	—	—	—	0·04
"Other infections"	15	3	8	0·12	0·09	0·26	0·14	0·13
Beri-beri	2	1	9	—	0·01	0·09	0·16	—
Cancer	6	1	2	0·03	0·04	0·09	0·04	0·09
"Other constitutional".. ..	6	—	1	0·04	0·04	—	0·02	—
Diseases of the—								
Nervous system	31	3	10	0·20	0·18	0·26	0·18	0·17
Circulatory	53	6	19	0·34	0·32	0·53	0·34	0·11
Respiratory	16	2	11	0·09	0·09	0·17	0·20	0·13
Digestive	52	6	15	0·23	0·31	0·53	0·27	0·21
Urinary and generative ..	15	—	4	0·11	0·09	—	0·07	0·07
Other: ill defined and unknown	26	6	29	0·14	0·15	0·53	0·52	0·13
Alcohol	32	3	—	0·22	0·19	0·26	—	0·04
Heat-stroke	8	—	7	0·06	0·05	—	0·12	0·02
Homicide	5	—	6	0·03	0·03	—	0·11	—
Suicide	35	5	17	0·18	0·21	0·44	0·29	0·11
Casualties to ships	188	6	135	1·34	1·12	0·53	2·40	1·32
Accidents on board	136	15	51	0·91	0·81	1·33	0·91	
,, on shore	94	5	1	0·69	0·56	0·44	0·02	
Total	860	73	450	5·67	5·13	6·48	8·01	3·44
Alcohol	32	3	—	0·22	0·19	0·26	—	0·04
Diseases	362	39	233	2·24	2·16	3·43	4·14	1·94
Injuries	466	31	217	3·21	2·78	3·74	3·84	1·46

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[1] THE LANCET, 1924, ii., 981; 1925, i., 783.

modifying of the classification of diseases in the statistics it issues of the deaths of seamen, yet it has evidently decided to adhere to that originated by the great William Cullen (Professor of Medicine in Edinburgh from 1755 to 1790), which, since the re-birth of medicine in the "seventies" of last century, has been deserted by all the best authorities and by most Government departments. If this organisation of laymen has the self-confidence to stand, with no medical officer's signature to support it, against all educated medical opinion as regards classification of disease, may it not also have its own private standards in preventive medicine? It is to be hoped that is not why Lascar seamen go on having three times as many deaths from tubercle as have British seamen, who, under the Board of Trade, have 60 per cent. more statutory space in ships. The Board of Trade appears to be recognised by the Prime Minister as in charge of the health of seamen. It does provide for the treatment of their diseases and for drugs to heal them when sick, though it has resigned the treatment of their venereal diseases to the Ministry of Health. But the Board publishes no annual report on the health of the 250,000 merchant seamen in its charge, and can anyone believe that it takes its responsibility seriously? That responsibility should undoubtedly be transferred, as the Royal Sanitary Institute suggested last year, to the Ministry of Health.

TWO YEARS' WORK IN IRAQ.

Report of Inspector-General of Health Services.

The Inspector-General of Health Services in Iraq has issued from Baghdad his report for 1923 and 1924, in which he claims that in spite of many difficulties satisfactory progress has been made by his department. Schemes for making local authorities responsible for their hospitals and health work have fortunately been abandoned, and the central government pays for the upkeep of the whole service, which ensures that there shall be none of the local weak links whose inefficiency may prove fatal in an epidemic. At the end of 1923 the civil health service maintained 1170 beds; there are now 18 hospitals and 32 dispensaries, and the Royal Hospital at Baghdad, with 250 beds and a large out-patient department, has become a most valuable medical centre with excellent facilities for treatment and teaching. Other hospitals are making progress and the new Maude Memorial Hospital at Basrah, which will have 120 beds, will be the best for its size in the country. The authorities intend gradually to build up a service staffed by Iraqi doctors, but it is extremely difficult to get candidates, and the local doctors do not take kindly to travel amongst the tribes, which is a most valuable part of the work done by British surgeons. Three-quarters of the population of 3,000,000 are tribesmen and the usefulness of specialists at Baghdad depends on the persuasive ability of outlying workers. This nomadic character of the people makes it hard to secure vital statistics, and these can only be given for the great towns. Here the figures for births are unreliable because the people neglect notification on principle, remembering that the Turkish officials used the information they thus obtained for conscription for the army.

Infectious Diseases.

Under Turkish régime epidemics were controlled by the inefficiency of transport. Now the railways which connect Baghdad with Basrah, Shergat (70 miles south of Mosul), and Khanaqin, and the motor routes to Damascus, Beirout, and Teheran enable diseases to spread up and down the country in a day or two. Iraq is full of holy places and the pilgrims are an additional problem, since for political reasons it is not always possible to stop their movements. For example, during an epidemic of cholera at Karbala in 1923 90,000 pilgrims came to the town; but although they could not be stopped nearly all were inoculated. In the 1923 cholera epidemic roughly 300,000 inoculations were done by the Service—vaccine had to be prepared in Baghdad—and their success "affords a very definite proof of their value." This epidemic showed itself first at Abadan in Persia, 30 miles below Basrah, and here there were 961 cases with 911 deaths in about six weeks, out of a population of 6000. Then it spread to Basrah, which has over 50,000 inhabitants; but the preventive measures adopted before the disease had got a grip on the town reduced the number of cases to 605; there were 436 deaths. The most urgent need was to save Baghdad from an epidemic, and by means of traffic control, inoculation, and the establishment of segregation camps this was achieved; in the whole of Iraq there were only 1640 cases with 1100 deaths.

Plague.—There were 787 reported cases of plague in Iraq in 1923 and 523 in 1924. The epidemic in these two years was not exceptional, as the disease appears yearly in Baghdad and Basrah, and sporadically elsewhere. It is impossible to ensure that plague-infected rats will not occasionally gain access to river boats, and the railway presents a further problem which is apparently insoluble. The carriage of grain by rail is essential for the commerce of the country, and whatever precautions may be taken for cleansing railway stock it is obviously impossible to prevent rats gaining access to wagons at some part of the loading or shunting operations or during their passage up or down the line. The country is therefore faced each year with the possibility of local epidemics. The disastrous outbreak in 1918 at Amara, where 500 cases occurred in a population of 12,000, may be taken as an example. The possibility of similar epidemics is greatly increased by the extension of the railway from Baghdad to Kirkuk and its proposed extension to Mosul. The value of plague vaccine as a protective measure and in reducing case-mortality is definitely shown in the report; 300,000 inoculations have been given in Baghdad during the last six years without accidents; although the reaction is severe inoculation is willingly accepted by all classes except the most ignorant, and the M.O.H. of Baghdad has strongly urged that it be made compulsory whenever plague appears in a town. It is doubtful, however, if this could be enforced by the Iraq Government.

During the cold wet winter seasons of 1923 and 1924 there have been small epidemics of pneumonic plague in which the infection occurred from mouth to mouth or by contact with corpses. These outbreaks are especially interesting in view of the opinion, now gaining ground, that pneumonic plague differs from bubonic plague through the action of a symbiotic organism such as the bacillus of pneumonia. The two forms of plague occurred together, and "their origin was undoubtedly from bubonic plague cases in Baghdad, the virulence of which had become modified by some factor connected with the climatic conditions." The mortality of the pneumonic variety was 100 per cent. The bubonic mortality varies; it was 85·7 per cent. in 1921 and 55·1 per cent. in 1923.

Small-pox is endemic amongst the tribes and occasionally becomes epidemic in the towns. Vaccination is compulsory, but although even the wildest tribes recognise its value more than is done in England, the law is hard to enforce owing to the carelessness of the people and inaccurate birth notification. Over 80,000 vaccinations were performed in 1923 and now eight travelling vaccinators have been appointed. *Measles* is always present in some part of the country; in 1924 there were 1347 reported cases and this is considered an epidemic year. There have been only a few cases of *typhus*, and these are attributable to pilgrim traffic from Persia, where the disease is prevalent. *Enteric group diseases* occurring in Iraq are fortunately not usually very severe; 158 cases were reported in 1923 and 134 in 1924. A progressive increase in the number of cases of *tuberculosis* is reported yearly. There were 178 in 1921, 398 in 1922, 503 in 1923, and 819 in 1924. The general opinion is that the increase is only apparent and is due to better notification of cases and to increased confidence in medical institutions, but it is also possible that a proportion of the increase is actual and is due to a lower standard of living now that the population have lost the free flow of money that came to them from the British Government during and after the war, and are resuming their harder but more normal existence. *Anthrax* from time to time occasions epidemics of varying severity amongst sheep and cattle, but is comparatively uncommon amongst the Iraqi who live in close contact with them. Malignant pustule has a stereotyped treatment amongst the tribes. The carbuncle is surrounded by a wall of dough, the centre of which is filled with gunpowder and lighted; the process is repeated until the burning gunpowder produces pain, after which the burned area is left to heal. This treatment is often efficacious, the disease in Iraq being of low virulence.

Schistosomiasis.—Bilharzia is probably the commonest disease in Iraq, and about 90 per cent. of the population of the southern half of the country live in localities where they are exposed to infection. In these areas the incidence is from 20–100 per cent., and in some places to pass blood in the urine is considered normal. Till complications supervene the inhabitants will not submit to treatment, and even then they are indifferent and think the benefits of a long course of antimony injections not worth the trouble. Schemes for eradicating the water-snail which is the intermediate host involve the temporary closing of canals and consequent loss of crops, and it is doubtful if they could be carried through. *Malaria* roughly corresponds in distribution to bilharzia—that is, it favours the marshy and irrigated areas. The health service annually treats some 45,000 persons, but these are only a small fraction of those affected, and the treatment can seldom be more than palliative. Perhaps 20 per cent. of the population of Iraq (600,000 persons) require treatment, and about 20,000 lb. of quinine would be needed annually for merely palliative treatment. This would involve an expenditure of Rs.600,000 per annum, which is at present out of the question ; in 1923 and 1924 a total of 6900 lb. distributed was the most that could be paid for. Radical antimalarial measures are expensive, and large drainage operations would deprive many of the population of their means of livelihood (e.g., rice and date cultivation). Further activities against the disease must therefore wait until the Government can afford to distribute more quinine. The report gives an interesting account of an apparent epidemic of malaria in 1924 which was possibly an infectious fever of the nature of influenza which determined or aggravated attacks of malaria. *Leprosy* is widely spread throughout the country, but probably the total number of cases in Iraq is not more than 300. Treated as outcasts amongst the tribes, they drift into the large towns ; it is rarely possible to trace any given case to any other. The establishment of a leper colony presents almost insurmountable difficulties—financial, tribal, racial, and religious.

The Work of Health Service Institutions.

Although a holy country to a large section of the Mohammedan world, Iraq does not attract charitable endeavour, in contrast to Palestine, where two-thirds of the lavish medical facilities owe their existence to charity. Practically all the public hospitals and dispensaries have to be maintained by the State. The work is limited by lack of money, but in two years there have been nearly two million out-patient attendances, and in 1924 15,500 cases were treated in hospitals. The care of the aged, infirm, and incurable is impossible. The first-class hospitals at Baghdad, Basrah, and Mosul perform between 2000 and 3000 major operations yearly, but such operations are practically limited to hospitals in charge of British surgeons. Two ophthalmic surgeons are employed—at Basrah and Baghdad—and a great deal of work is being done ; but the field is enormous. About 80 per cent. of the population of Baghdad suffers from trachoma, and as a charge of 4 annas a week reduces attendances at clinics by three-quarters, it is again clear that the Government will have to pay if things are to improve. X ray facilities are provided in the three great towns ; there is a chemical department at Baghdad, and a very competent pathologist in charge of a laboratory there, who also supervises the antirabic and vaccine lymph institutions. Rabies is widespread in Iraq, and cases of dog, jackal, and wolf bites present themselves in a steady stream. The report gives details of a series of interesting cases showing a considerable measure of success in treatment.

Venereal diseases are extremely common amongst all classes, but the manifestations are milder than in Europeans. Of 280 registered prostitutes examined at Basrah 270 showed infection ; brothels are mainly under supervision and preventive measures are encouraged. *Opium-eating* is a well-established practice, especially in the centres of Persian influence, and opium-smoking is common at pilgrimage towns. The tribes use opium chiefly for medicinal purposes, but under Turkish and Persian influence the morphine habit is growing commoner in towns, and cocaine is taking hold of the educated classes.

Medical and Dental Practice.

With two exceptions all the private medical practitioners in the country have settled in the three great towns, where there are far too many of them. A huge influx of doctors comes from Syria, where many poorly qualified men are yearly turned out on a country which has an excess of them already. Turkey is closed to them, so they exploit Iraq. The consequence is that charlatanism and questionable practices are becoming increasingly rife, and that Iraqi doctors find it hard to live. There is as yet no Iraqi medical school. Dressers and hakims are perforce permitted to practise under nominal supervision in some areas, and more or less qualified dentists are allowed to practise with reservations. The country suffers from a lack of trained midwives ; but conditions are improving in the towns, and in most of the country districts there are one or two midwives who may be regarded as fairly clean in their methods. Unfortunately, in the East very few respectable women will take up this work, and of the middle-aged women available very few can read or write, and those who cannot are somewhat insusceptible to training.

MEDICAL MISSION CONFERENCE.

THE meeting of the Medical Mission Advisory Board of the Conference of British Missionary Societies at the Bible House, Queen Victoria-street, London, on Sept. 23rd, occupied most of its time in discussing the problems of passing on to the national churches the responsibility and support of mission hospitals, and also the question of the strict adherence to a high standard of nursing, especially in a country like China. Dr. Hugh H. Weir, medical secretary of the S.P.G., who acted as chairman, in initiating the discussion, said that hospitals should not be looked upon merely as humanitarian institutions or even as valuable instruments in bringing forward the Christian gospel, but as instruments for perpetuating the Incarnation. Their tone was therefore the all-important factor, and the primary question to be borne in mind was how far this was being created and how far it would be continued in other hands. Dealing with obstacles to be overcome, Dr. James L. Maxwell, general secretary of the China Medical Missionary Association, said that the financial ones could largely be met by further accommodation for paying patients, but that the question of qualified doctors was more difficult owing to the fact that there were now only seven or eight properly equipped Christian medical schools turning out some 20 men a year to supply the need of China's 300 mission hospitals. Dr. J. H. Cook, medical secretary of the C.M.S., speaking from his experience in Africa, emphasised the need of spiritual, intellectual, and social fitness of the native doctors before institutions could be handed over. The question raised by Mr. W. McAdam Eccles, F.R.C.S., as to how far foreign doctors could continue on the staff after the handing over of a hospital was not answered in the course of the discussion, while the problem which perplexed many, especially some of the women doctors from India, was the advisability of native doctors on the hospital staff also having a private practice. It was felt by many that this was not advisable. Dr. H. T. Chiang, a Chinese guest from Hankow, said that the time was not ripe for handing over hospitals to the Chinese Christian Church. He advocated Anglo-Chinese boards of management to turn the institutions into community hospitals, and the gradual reduction of grants-in-aid to provoke local responsibility. At the afternoon session the actual discussion was almost confined to the standard of nursing in China. Some pleaded that this was too high, too "Americanised," and was a bar to the preparation of sufficient nurses for the urgent needs of the country. It was evident, however, that the majority did not wish to see standards lowered, and as was pointed out, this was the express wish of the Chinese themselves, who formed to-day 75 per cent. of the membership of the Nursing Association of China.

REFUGEES IN MACEDONIA.

THE situation of refugees at Salonika is still serious. It is estimated that in this city alone there are 80,000 refugee widows and children, many thousands of whom are solely dependent on charity. The Government's allowance to them is 1 drachma (about ¾*d.*) per day, and bread costs 8 drachmas a loaf. In general town-dwellers are worse off than peasants in these unaccustomed conditions ; but those refugees who have been sent to outlying parts of Macedonia as agricultural tenants are in serious plight as they received their land too late to sow crops and the Government is not going to distribute grain for food as it did last year. Many crops have also failed through storms. At Salonika refugees are still crowded in mosques, schools, and warehouses. In the barracks a family of six or seven often occupies a floor space of 3 or 4 square yards. Many have been living like this for three years and are still wearing the remains of the clothes in which they arrived. Malaria is not so bad as last year, but in one camp there are 400 cases, and 150 cases of dysentery. The "Save the Children Fund" is the only organisation rationing the people in the Salonika area and is feeding some 9000 people there, but has to turn many away. Its milk stations are greatly appreciated and clothes are badly needed. In order to maintain and increase its services it urgently requires help.

TO CHIROPODISTS AND OTHERS.

THE Society of Chiropodists has reprinted[1] a series of lectures delivered by Mr. Lake, which cover an extensive area, and they should appeal to a wider public than that comprised by the Society. They would form, in fact, an admirable introduction to anyone starting to study medicine, or indeed to anyone interested in the progress of medical science. The development of bacteria, the principles of asepsis, and the causes and processes of disease are dealt with in a masterly manner. The more special articles on the mechanism of the foot and its deformities are of value as an introduction to this branch of orthopædics. But the lectures cover the field from the early history of man to the latest advances of the chemistry of colloids. Indeed, the most interesting lecture is that on the Antiquity of Man, where the author shows a quite exceptional knowledge of his subject. The book is really a volume of occasional essays and we would recommend the pleasure of reading them to many whose interest in chiropody is limited to their personal comfort.

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[1] Lectures to Chiropodists. By Norman C. Lake, M.D., M.S., D.Sc. Lond., F.R.C.S. Eng., Surgeon to Out-patients, Charing Cross Hospital. London: Incorporated Society of Chiropodists. 1925. Pp. 246. 10*s.*

OBLITERATION OF TATTOO MARKS.

A correspondent inquired in a recent issue of The Lancet as to what method could be used to remove tattoo marks on a girl's legs which were revealed by the fashionable diaphanous stockings. It is said that tattooing disappears before civilisation; but here is an unfortunate case where it has merely become more apparent. To a young woman of the period it would, of course, be supererogatory to point out the possible uses of superimposed pigments: presumably they are for some reason inapplicable or unstable in this particular case. It has been suggested that the obvious solution is to re-tattoo each mark with flesh-coloured pigment, but apart from this unattractive method, there are various other courses for which success is claimed. From Messrs. Thos. Christy and Co., of 4, Old Swan Lane, Upper Thames-street, E.C. 4, an account reaches us of the virtues of a preparation named Extaetol, which is made in Germany. The pigment is brought into contact with the remedy by application after pricking the skin with needles over the marks. The ointment removes part of the corium and the active process takes about six days; the instructions should be carefully considered before ordering. Skillem recommends in the *Philadelphia Medical Journal* (June 18th, 1898) glycerole of papain as the most efficient and least painful agent. It is pricked in over the tattoo marks after desensitisation with ethyl chloride spray. The following has also been suggested, but cannot be guaranteed. Salicylic acid which has been massed with glycerine to the consistence of dough is applied over the marks with a compress and strips of adhesive plaster and is allowed to remain in contact for some time. After the first dressing the epidermis over the marks is removed, and a fresh application of the salicylic paste applied. Usually, the second application removes the marks, but sometimes it is necessary to make a third. The treatment must be applied very cautiously.

APOPLEXY OF THE SOFT PALATE.

As long ago as 1892 Le Jeune, of Boulogne, drew attention to a condition of small hæmatomata of the soft palate which he called "apoplexie de la luette." Bosviel in 1911 recorded a similar case under the title "apoplexy of the tonsillar fold." The swellings are produced by the spontaneous rupture of small vessels and subsequently break through the mucous membrane and cause a hæmoptysis. There is little or no danger involved, but the patient may be gravely alarmed or subjected to considerable discomfort. MM. J. Garel and A. Gignoux, writing in a recent issue of the *Journal de Médecine de Lyon*, regard the condition as not uncommon, although seldom recorded. They have collected 17 cases. It may arise even during sleep, as in a case of Bosviel's, but more usually in the course of a meal, evidently as the result of contraction of the palate. The patient suddenly experiences discomfort in the throat, and if the hæmatoma be a large one the sense of stifling may be agonising and may continue for several hours. It is immediately relieved by opening the tumour with a bistoury or galvano-cautery. More often the hæmatoma is the size of a grape-stone and ruptures by itself in a few minutes, the lacerated mucosa cicatrising in a few days. The authors have not been able to determine the ætiology; trauma undoubtedly plays a part in many instances. A man who was liable to subcutaneous ecchymoses developed a large hæmatoma on the anterior pillar of the fauces while this was being lightly massaged to expel the secretions from his tonsillar crypts. There is thus an analogy with the ecchymoses produced in the vocal cords by a vocal effort. On the other hand, there are cases where no trauma can be traced, and there seems to be a certain individual tendency to the phenomenon. One of the cases, a woman aged 30, had had a palatal hæmatoma every two or three months for 12 years, usually coinciding with the menstrual period. Other cases had experienced it on several occasions. As the false hæmoptysis may continue for several hours much unnecessary alarm may be caused by this trifling accident, and it is well for the practitioner to bear in mind the possibility of its occurrence among his patients.

Medical Diary.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

Tuesday, Oct. 6th.

ORTHOPÆDICS: at 5.30 P.M. (Cases at 5 P.M.)
Presidential Address:
Mr. A. S. Blundell Bankart: The Physiology of Muscular Action.
A discussion will follow.
Cases may be shown, either in connexion with this subject or otherwise.

Thursday, Oct. 8th.

NEUROLOGY: at the Middlesex Hospital, Berners-street, W. 1, at 8.30 P.M.
Presidential Address:
Dr. Campbell Thomson: The Work of Sir Charles Bell in Relation to Modern Neurology.
Drawings and specimens will be exhibited.

Friday, Oct. 9th.

CLINICAL: at 5.30 P.M. (Cases at 5 P.M.)
Cases:
1. Dr. Parsons-Smith: Two Cardiac Cases.
2. Dr. Douglas Firth: Bronchiectasis.
3. Dr. Bernard Myers: (*a*) Transposition of Viscera. (*b*) Morbus Cordis of Unknown Origin.
4. Dr. L. S. T. Burrell: (*a*) Clubbing of Fingers and Toes. (*b*) Abdominal Tumour.

OPHTHALMOLOGY: at 8.30 P.M. (Cases at 8 P.M.)
Discussion:
Penetrating Injuries of the Eye.
Opener:
Mr. Gray Clegg.
Other Speakers: Mr. G. H. Pooley, Mr. Harry Lee, Mr. Goulden.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W.

Monday, Oct. 5th, to Saturday, Oct. 10th.—Central London Throat, Nose, and Ear Hospital, Gray's Inn-road, W.C. Special course in Laryngology, Rhinology, and Otology. Clinical Course and Operative Surgery Course, of which one or both may be taken. Operative Surgery Class daily 9.30 to 11.30. Clinical Course most days, 9–5. In- and Out-patient Operations, Clinics, and Lectures.—London School of Hygiene and Tropical Medicine, Endsleigh-gardens, N.W. First two of a series of eight clinical demonstrations. Tuesday and Thursday, at 2, by Dr. G. C. Low and Dr. Manson-Bahr. The subjects considered will be the more important diseases of tropical countries, illustrated, if possible, by cases.—Royal Free Hospital, Gray's Inn-road, W.C. Lecture-demonstration on Treatment by Electro-Therapy on Wednesday, Oct. 7th, at 5.30, by Dr. C. B. Heald.

NATIONAL HOSPITAL FOR THE PARALYSED AND EPILEPTIC, Queen-square, Bloomsbury, W.C. 1.

POST-GRADUATE COURSE: October-November, 1925.

Clinical Lectures and Demonstrations.

Monday, Oct. 5th.—2 P.M., Out-patient Clinic: Dr. Hinds Howell. 3.30 P.M., Paraplegia and its Treatment: Dr. Riddoch.
Tuesday, Oct. 6th.—2 P.M., Out-patient Clinic: Dr. Walshe. 3.30 P.M., Epilepsy: Dr. Adie.
Thursday, Oct. 8th.—2 P.M., Out-patient Clinic: Dr. Kinnier Wilson. 3.30 P.M., Progressive Muscular Atrophy: Dr. Martin.
Friday, Oct. 9th.—2 P.M., Out-patient Clinic: Dr. Adie. 3.30 P.M., Pituitary Tumours: Mr. Sargent.
The Fee for the Course, including Pathology lectures, is £5 5*s*. For those who hold Perpetual Tickets the fee is £3 3*s*.

Course of Lectures and Demonstrations on the Pathology of the Nervous System.

Thursday, Oct. 8th.—12 noon, Neuronal Degeneration: Dr. J. G. Greenfield.

Course of Lectures and Demonstrations on the Anatomy and Physiology of the Nervous System.

Monday, Oct. 5th.—12 noon, (*a*) The Significance and Evolution of the Nervous System. (*b*) Methods of Investigation: Dr. J. L. Birley.
Dr. H. J. Macbride will give a Course of Eight Clinical Demonstrations, chiefly on Methods of Examination of the Nervous System, in the Wards at 10 A.M. on Tuesdays and Fridays, if sufficient entries are received. The fee for this Course will be £2 2*s*.
Mr. Armour and Mr. Sargent operate at the Hospital on Tuesday and Friday mornings at 9 o'clock, or at such other times as may be announced.
Any part of the Course may be taken separately. Special arrangements will be made for those unable to take the whole Course.
Fees should be paid to the Secretary of the Hospital at the Office on entering for the Course.
J. G. Greenfield, Dean of Medical School.

UNIVERSITY COLLEGE, London.
Wednesday, Oct. 7th.—5.30 P.M., Prof Fritz Weigert (Leipzig): The Photochemistry of Vision (public lecture in English). 7 P.M., Mr. A. H. Barker: Public Lecture on the Heating Equipment of a Large Hospital.

ST. JOHN'S HOSPITAL, Leicester-square, W.C.
Tuesday, Oct. 6th.—5 P.M., Dr. S. E. Dore: Physiology of the Skin.
Thursday.—5 P.M., Dr. J. M. H. MacLeod: Anatomy of the Skin.

MANCHESTER ROYAL INFIRMARY POST-GRADUATE COURSE.
Tuesday, Oct. 6th.—4.15 P.M., Dr. F. E. Tylecote: Prognosis and Treatment of Bronchitis.
Friday.—4.15 P.M., Dr. E. M. Brockbank: Pre-Existing Disease as a Cause of Disablement in Workers.

An Address
ON
UNUNITED FRACTURES.

Delivered at St. Bartholomew's Hospital, London,

By ERNEST W. HEY GROVES, M.S. Lond.,
F.R.C.S. Eng.,
PROFESSOR OF SURGERY, BRISTOL UNIVERSITY.

When I was a student in these revered and ancient walls the subject of fractures received very scant attention in our surgical curriculum. Of course, necessity sometimes compelled the admission of a case of fracture of the leg bones into the wards, and then splints were duly applied and after some weeks the patient was sent out; what became of him we never inquired—he did not interest us. The smartness of a house surgeon was recognised by this among other tests—that he should avoid taking in fracture cases and, having taken them in, should hide the fact and get rid of the offending case as soon as possible. I remember Mr. Lockwood advising us if we ever got a fracture case in private practice to pass it on to our rival across the street, so that it might be his undoing and not ours, but beyond this, I cannot recollect any member of the surgical staff ever taking any notice of a fracture during my dressership. No doubt this is all changed now, and in the full illumination of the X rays the diagnosis and treatment of fractures are taught as embodying the most important principles of the science and art of surgery.

Causes of Non-Union.

The study of a case of a fracture which has failed to unite is one which may well absorb the interest of the pathologist and the physician as well of the surgeon and the mechanic. Why does repair sometimes fail? What determines the ordered balance between tissue formation and tissue absorption? What is the difference between an osteoblast and an osteoclast? What is the vital relation between the cells and the intercellular material of the skeleton? Such are some of the questions which are suggested and which I find easier to ask than to answer.

Let us consider the last question a little more closely, for it affords a good illustration of the baffling nature of the problem of bone pathology, and it is very intimately connected with explaining the nature and determining the treatment of an ununited fracture. All connective tissue and especially bone and cartilage are distinguished by the large proportion which the intercellular material bears to the cellular element. Is this intercellular material living or dead? A piece of bone is regarded as dead if it contains neither blood-vessels nor cells. But according to this definition all the extra cellular material of the bone is then dead; it is a secretion or excretion of the living cells which can be laid down or taken up according to the necessities of the moment.

The endoskeleton of the vertebrate, like the exoskeleton of the invertebrate, is formed by the living tissues, but is outside them. Any piece of human bone may become temporarily deprived of its blood-supply and its cells all die, and yet in a very short time new blood-vessels and new cells invade the dead bone and the dry bone truly lives once again. On the other hand, a devitalised portion of bone may remain for an indefinite time without blood and without cells, an indolent mass incapable of growth or repair. This, in fact, is the condition of the ends of the bones in many cases of ununited fracture.

The causes of non-union may be grouped as follows:—

Mechanical—
- Gap between the bone ends.
- Unrestricted mobility.
- Interposition of soft parts.
- Foreign bodies.

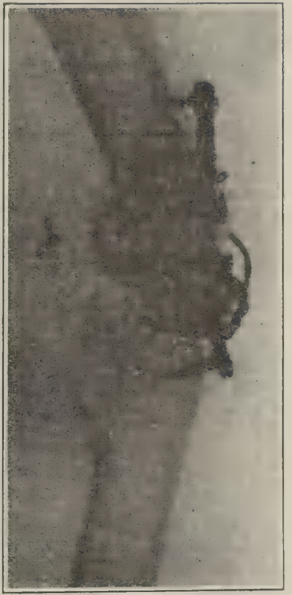
Vascular—
- Sepsis, destroying the vital elements.
- Sclerosis, the bone canals are closed and the cells imprisoned.
- Atrophy, the vital elements disappear and only an earthy shell remains.
- Fibrous tissue and cartilage cover over the bone ends and so imprison the vital elements.

Disease—
- Infection, pyogenic or specific, tubercle, gumma.
- New growth—
  - Fibrocystic disease, myeloma.
  - Sarcoma, carcinoma.

Space does not permit of the discussion of each of these causes, and I must be content to emphasise one or two points.

It often happens that several of these causes coöperate. Thus, in the fracture of the neck of the femur, it is difficult to fix the bones, and with the ordinary splinting there occurs mobility, associated with want of apposition and the interposition of part of the capsule of the joint. The proximal fragment has a very poor blood-supply and atrophy quickly takes place. Again in the case of the shaft of the humerus, the difficulty of efficient fixation is the prime cause of the frequent non-union. The bone ends throw out granular tissue or pro-callus, but constant movement prevents this bridging the gap. In the meantime muscle and fascia wrap closely round the bone ends, and each becomes clothed in fibrous tissue or fibro-cartilage. The importance of mobility as a cause of non-union has been obscured by the teaching of those who advocate early movement of a limb as conducing to rapid restoration of function. But there is no real conflict of opinion. Movement of the limb as a whole and of the muscles covering the fracture is good because it promotes vascularity. But movements of the bone ends against one another in the early period after a fracture certainly prevent union.

Fig. 1.



Ununited fracture of humerus, treated by plate, wires, and screws two years previously. (For result of grafting operation, see Figs. 4 and 5.)

One cause of non-union which is not uncommon is the inefficient application of screws and plates or wire in the treatment of a fracture. This, too, has been the subject of much misapprehension. It is commonly said that it is the malign influence of the foreign body which has hindered the vital repair. But this is not the case. Bones tolerate foreign bodies very kindly, provided they are fixed and give fixation. But it is the small plate which soon works loose, or the badly applied wire which works the mischief, causing friction, destruction of granular tissue, and non-union. It is easy to provide abundant proof of this both from experimental and clinical evidence. Fig. 1 is a good illustration of mechanical fixation which provides the maximum of frictional irritation with the minimum of mechanical rigidity. That there was nothing at fault with the bone itself is proved by the kindly way it healed after a bone graft (see Figs. 4 and 5).

VARIETIES OF NON-UNION.

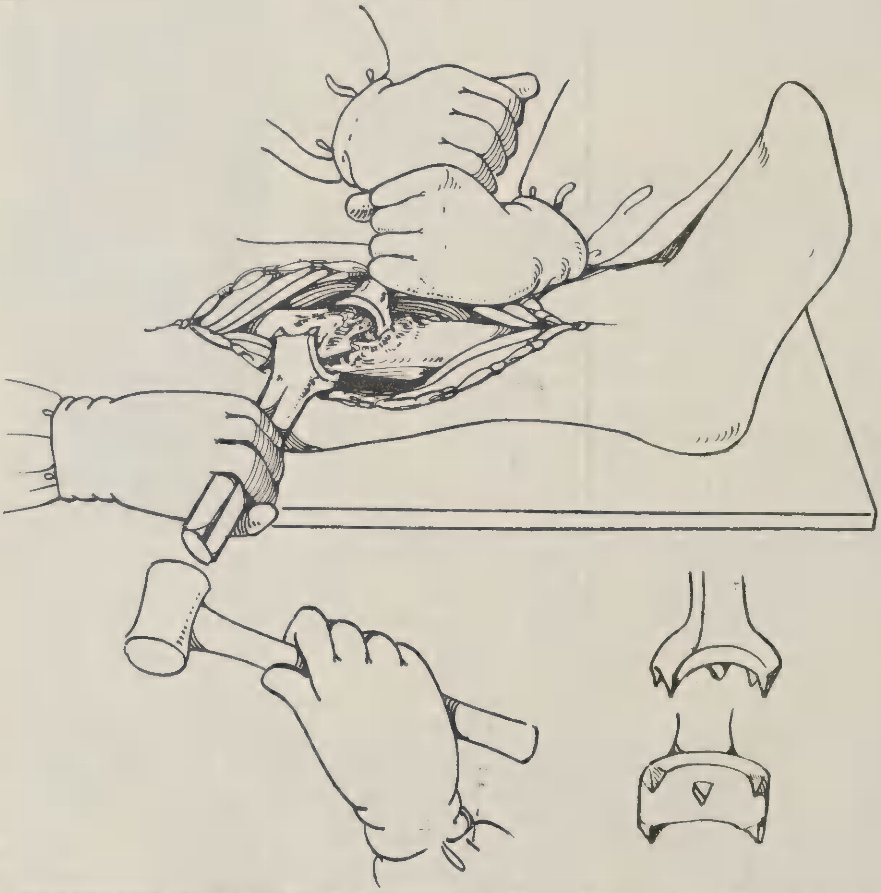
There are at least four different varieties of ununited fractures, and each variety has its own structural peculiarity and requires special treatment. They are :—

(*a*) *Delayed Union*—
Mere cellular inactivity.
No callus and little or no fibrous tissue.

(*b*) *Non-union*—
1. Fibrous union : Fibrous tissue or fibro-cartilage between and connecting the bone ends.
2. Pseudarthrosis : Bone ends eburnated and covered with fibro-cartilage. A joint cavity with capsule and synovial fluid between the ends of the bones.
3. Gap fracture : A piece of bone lost, the bone ends held apart by the companion bone. The bone is usually thin and atrophic.

It is not always possible to distinguish between the first and the second varieties—i.e., between delayed union and fibrous union, but the other two varieties—the false joint, with its flail-like mobility, and the gap fracture—are quite distinct. In merely delayed union the bone's ends are in contact, but callus does not form in such a way as to unite them. Such callus as there is is only the internal callus which seals up each marrow cavity. The X rays show no change in the bone except for a slight blurring of the distinction between the cortical and medullary layers. It is a state of cellular indolence and inactivity, which can generally be quickened into healthy vital repair by an appropriate stimulus. In fibrous union, on the other hand, the bone ends are thickened, eburnated, and greatly increased in density as seen by the X rays. The bone ends are covered in fibrous tissue or fibro-cartilage, whilst blood-vessels and osteoblasts alike are strangled or imprisoned in hard sclerotic bone. In making this distinction, however, it has to be borne in mind that the one condition leads to the other, and it is therefore not always possible to draw a sharp line of demarcation between them. From a practical point of view, delayed union is a condition which can be cured by non-operative or simple comminution methods, whilst true fibrous union will require open exposure with resection of the eburnated bone ends.

FIG. 2.



Fractured tibia exposed and treated by subperiosteal comminution ; inset shows jaws of instruments used.

NON-OPERATIVE METHODS OF TREATMENT.

In all doubtful cases when not more than six months have elapsed since the fracture, it is worth while to give a good trial for a period of about three months to non-operative methods. Such a case is often presented by a fracture of the lower third of the tibia. Perhaps six months has passed since the accident, the broken bone presents distinct mobility but not much pain, and the X rays show no change in the bone ends except a little rounding off of the sharp contour. It is easy to make a mistake in such a case by treating it as if it were a recent fracture and putting on a plate. It may be true that if the fracture had been plated in the first place union would not have been delayed. But the essential fact of delayed union—viz., the cellular inactivity of the vital elements of the bone—now dominates the situation, and mere plating is more likely to make matters worse than better. To apply a plate requires that the bone ends should be partly stripped of their vascular covering and bored with holes, but then the bare area and the fresh holes are covered or plugged with plate and screws, a process which does much to hinder and nothing to promote callus formation.

There are three non-operative methods available and these may be used singly or in combination. They are : (1) voluntary movements, the fracture being protected with a splint ; (2) passive congestion with massage ; (3) injection of blood or blood products in and around the fracture.

In the encouragement of active movements the limb must be so protected by a case-splint that absolute rigidity without lateral movement is afforded to the bone, whilst the joints above and below are left free. The contraction of the muscles promotes hyperæmia and also pulls the bones together. In the case of the tibia the patient is made to walk, and this is a most efficient means of forcing the bone ends together and so promoting a frictional stimulus to callus formation. This type of treatment is very practical because it will enable most patients to resume their active work instead of keeping them in prolonged invalidity. The second non-operative method is the "damming and hammering" advocated by Owen Thomas. A piece of rubber tubing is placed round the limb above and below the fracture as tightly as can be borne without altering the arterial pulse and so kept for several hours daily. With this is associated a heavy percussion massage of the limb aimed at promoting tissue stimulation.

The injection of blood or of serum or fibrin has not been used much in this country, and its value is suggested chiefly by experimental evidence. It is really more difficult and nearly as painful as the open exposure of the fracture, and therefore to me it hardly seems worth while. Animal experiments are misleading in this matter. It may be true that blood injection round an injured bone will intensify callus production; but that is when the bone injury is recent and the bone healthy—there are plenty of bone cells and nothing to imprison them. But in an old fracture matters are different. The bone cells are locked up in a hard dense bone, the surface of which is sealed, and blood bathing the outside of such bone has very feeble power to liberate its essential and vital elements.

OPERATIVE TREATMENT.

Whenever union has been delayed for more than 12 months or when there is increasing mobility between the fragments associated with an X ray picture of rounded bone ends separated by a definite gap, then an open operation will be necessary if cure is to be effected. The actual nature of the operation will depend upon various circumstances, and it is a matter for skilled judgment founded upon experience.

The following are the principal considerations which must be taken into account before deciding upon an operation and in choosing the operative method: Age, health, and temperament of the patient; amount of disability, with and without a suitable splint; sepsis; existence of other lesions particularly those of joints, nerves, or blood-vessels; deformity; relation of the bone ends to one another—i.e., contact, overlapping, or gap; conditions of the bone ends, sclerosis, or atrophy.

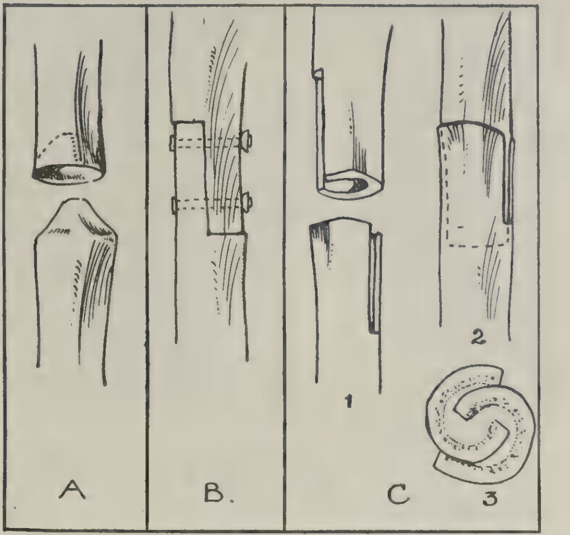
It must be borne in mind that the operation may be one of great difficulty or even danger, and that it makes a great demand upon the patient's vitality and powers of repair. It requires a patient who is keen, healthy, and young, in temperament if not in years. In some cases the amount of disability is very little. For many years Dr. Livingstone continued his active work as an explorer with an ununited fracture of the humerus, and I have known a busy general practitioner continue his work suffering from the same injury. Sepsis, whether actual or remote, is always a serious hindrance to reconstructive operations, although it may not prevent the adoption of the simpler revitalising procedures. The existence of serious complicating lesions of the joints, blood-vessels, or nerves may make it wiser to choose amputation rather than reconstruction, and this applies more particularly to fractures of the tibia.

Deformities should be corrected as far as possible before the fracture is dealt with, so that the freshly united bone is not subjected to any undue strain. The relation of the bone ends to one another should be carefully considered before deciding what type of operation is to be done. It is much better to aim at bringing the bone ends into contact and wide contact with one another, even at the sacrifice of length, rather than to depend upon bridging a defect with a graft. If there is much overlapping of the bone ends it is seldom possible or desirable to restore the bone to full length by traction—it is better to unite them side by side in a step-cut operation. If the bone ends are greatly sclerosed or much atrophied, they will repair slowly, and the mere addition of a graft will not supply the lost elements of vitality. The essential for success is the wide contact of healthy vascular bone surfaces, and if it is necessary to use a graft then this must have wide contact with healthy vascular bone at each end.

STIMULATION OF THE BONE ENDS.

Whatever may have been the first cause of non-union the ultimate conditions which make it permanent are want of contact and failure in vitality of the bone ends. If, then, the bone ends can be brought into wide contact without strain or deformity, it is only necessary to arouse their dormant vitality and union will take place. In the first place, all the dense fibrous tissue between the bones is removed, and raw surfaces of bone secured by scraping and chiselling. But such surfaces are usually indolent, bloodless, and sclerosed. They must be broken up so as to open up fresh blood channels and liberate the bone cells. Multiple drill holes or saw cuts may be made into the bones, or they may be chiselled into fragments. The latter is certainly most effective, because it is more drastic than drilling or sawing and it does not choke the fresh surfaces with the bone dust caused by drill or saw. But it is liable to split fragments clean off the bone, and such fragments will be very inert in the matter of repair. Recently I have adopted a modification of the chiselling method which is a sort of hammer and anvil procedure and aims at *subperiosteal comminution* (Fig. 2). The bone ends are exposed but the thickened periosteum over them is left undisturbed. The fibrous tissue between the bone ends is cut away by chisel and spoon. Then each bone end in turn is taken between the jaws of two spiked steel instruments, which are curved to fit the convexity of the shaft. These are then hammered together, using a heavy hammer, so as to crush the bone and periosteum, but not separating one from the other. Free oozing will, of course, result from this, and the two comminuted bone ends are left in the midst of a hæmatoma over which the soft parts are carefully sewn in several distinct layers without drainage. The limb is put up in a case-splint and active exercise taken as soon as possible.

FIG. 3.



Fitting methods: (A) Double cone. (B) Step-cut. (C) Sectoral interlocking: (1) Ends cut, (2) interlocked, (3) in section.

I would advocate such treatment for those cases in which union is merely delayed without gross change in the bone ends. It is simple and free from any risk except that of failure. If it fails it does not prejudice the success of a grafting operation done later.

SHAPING AND FITTING OPERATIONS.

But in all cases of definite non-union, the bone ends are so unhealthy that they must be not only cut into but cut away so as to secure a wide contact of raw surfaces of fresh bone. And this should be done in such a way as to fit and fix the ends together. Four things are necessary: Fresh bone—i.e., provided with blood-vessels and osteoblasts, wide contact, close apposition, and firm fixation. Whether it is that the osteoblast will not venture out to any distance from its bony origin, or whether an osteoblast ceases to lay down bone when it is at a distance from its parent bone, is not known, but the fact is undoubted that new bone is very rarely formed except in the close neighbourhood of existing bone. Therefore if fresh bones are fitted and fixed firmly together they will unite into one solid bone, whereas if they are in loose apposition they will only become tied together by fibrous union.

FIG. 4.

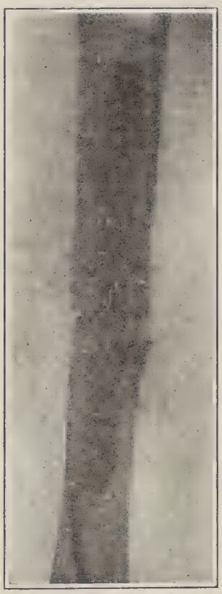


FIG. 5.

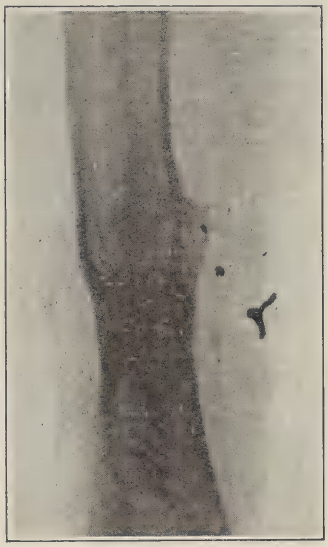


FIG. 4.—Fractured humerus (same case as Fig. 1) treated by autogenous intramedullary graft fixed by "split-and-thrust" method. One month after operation.
FIG. 5.—Same case as Fig. 4. Two years later.

FIG. 6.

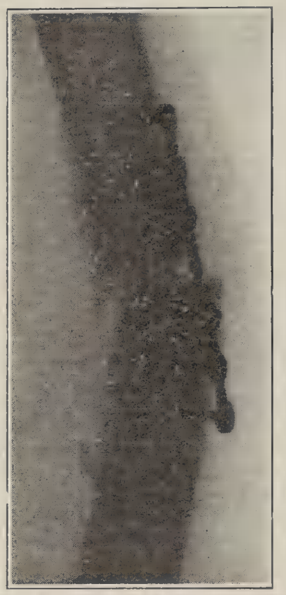


FIG. 8.

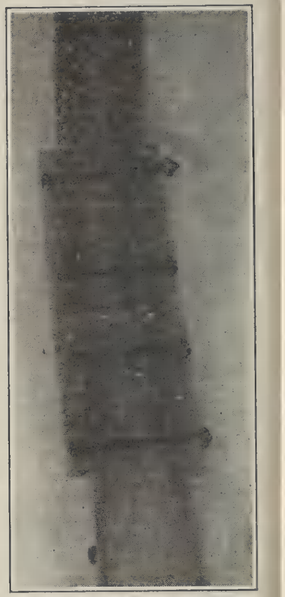
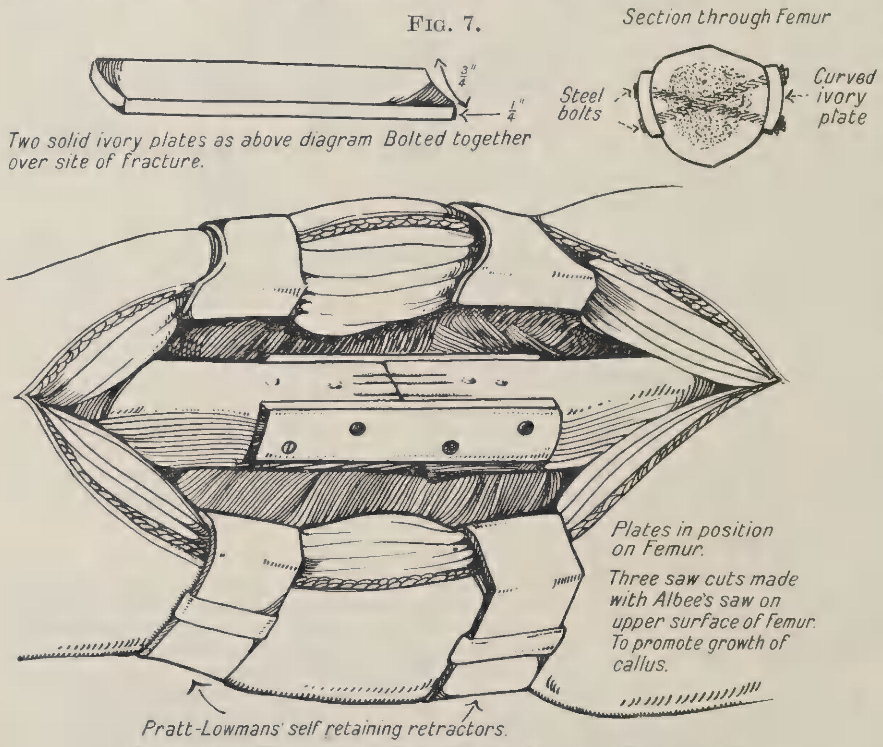


FIG. 6.—Ununited fracture of femur treated 12 months previously by inadequate plating.
FIG. 8.—Same case as Fig. 6. After operation, by a pair of ivory plates, bolted together.

A good illustration may be given from the joinery of a cabinet maker or carpenter. In such work all joining is done by accurate fitting. If glue is used, it is only to fix accurately apposed surfaces and not fill up cracks or deficiencies. No more should be asked of the reparative callus than a carpenter asks of his glue—i.e., to knit together surfaces which truly fit and are firmly fixed.

FIG. 7.


3/4"
1/4"
Two solid ivory plates as above diagram Bolted together over site of fracture.
Section through Femur
Steel bolts
Curved ivory plate
Plates in position on Femur.
Three saw cuts made with Albee's saw on upper surface of Femur. To promote growth of callus.
Pratt-Lowmans' self retaining retractors.

Same case as Fig. 6. Operation by bolting on pair of ivory plates.

The actual shaping of the bones after sclerotic tissue has been cut away should be adapted to the condition of the bones, the shape of the fracture, and the advisability of shortening the bone. Thus transverse fractures may be shaped as a double cone and fixed by a peg or a plate (Fig. 3, A). Oblique fractures may be step-cut so as to give a wide overlapping and fixed by bolts or bands (Fig. 3, B). Or an atrophic bone may have a piece taken out of its circumference and then be made to interlock with its fellow by engaging one edge of each bone in the marrow cavity of the other, a device which may be described as sectoral interlocking (Fig. 3, C).

It will be noted that all these reconstructive operations involve the shortening of the bone. This is of no great importance in the humerus. In the femur it is better to have a short strong leg than an ununited fracture. It is wise not to attempt full elongation of the thigh bone. It may be given one week's traction by a 25 lb. weight applied by a transfixion pin, and then at the operation the bone should be joined with some overlapping. It is dangerous on account of shock to pull the leg out to its full length, and it is fatal to the fixation if it be put up under strong tension. In the forearm and lower leg the fitting operations usually involve an osteotomy of the companion bone. Having fitted the ends together they certainly should be fixed. Such fixation may be by metal bolts, ivory screws, bands, or wire, or in many cases tendon ligatures, silkworm gut, or stout silk will suffice. If metal fixation can be dispensed with, so much the better, but it is absurd to make the non-use of metal sutures a guiding maxim of bone surgery. Having fixed the fitted bones together by proper sutures the limb is immobilised by an external splint or plaster-of-Paris.

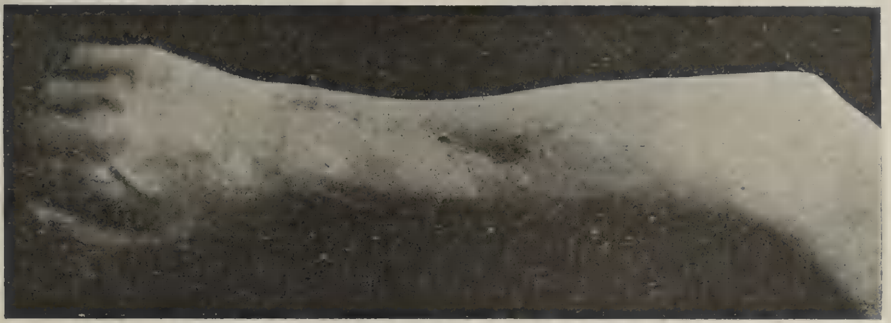
To recapitulate the essential points. Secure fresh bone by cutting away the unhealthy ends; provide wide contact of the fresh bone surfaces by accurate fitting; ensure close contact by proper sutures of which the metal bands and bolts are the most reliable; and get proper prolonged fixation by an external splint which must be worn for three months at least.

BONE-GRAFTING OPERATIONS.

The ideal and obvious method of treating ununited fractures is by putting in a bone graft. But it is well at the outset to realise that this method has very definite limitations, and that the conditions for success are very exact.

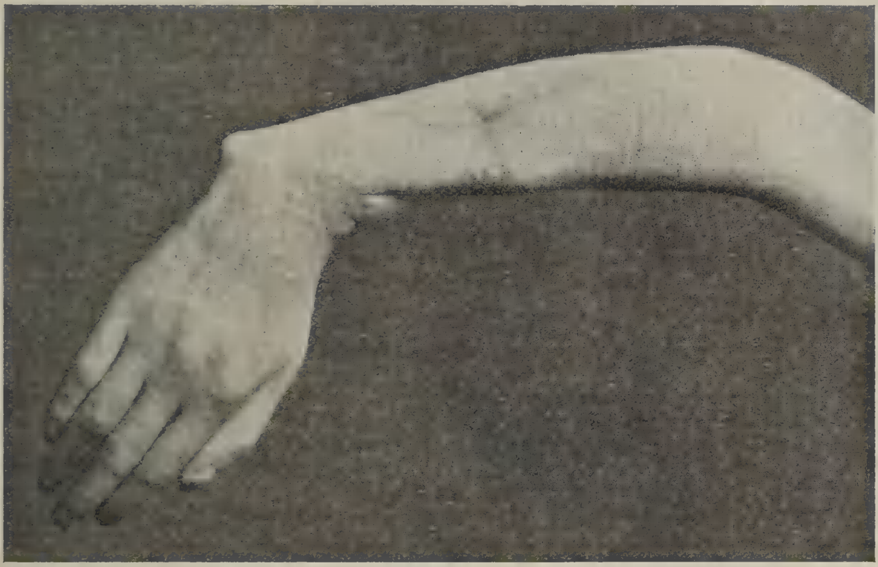
A piece of bone cut from the living bone of the patient is endowed with very limited vitality. It has living bone-cells, but for the most part these are locked up in the depth of the dense skeletal tissue. It has blood channels cut off from the active circulation, and it has a strong rigid frame which can be used as an internal splint or strut, whilst this framework is porous and is thus capable of acting as a scaffold work into which new bone tissue may penetrate from neighbouring active bone. It has no power of independent growth, and if it is placed in any living tissue other than the skeleton it rapidly withers away. Its power of producing new bone is very limited, and by many authorities is considered non-existent. When used to repair a defect in a long bone it can act in four ways. First, as an internal fixation splint; second, as a strut by which continuity being restored to a broken bone, the latter is provided with a functional stimulus; third, as a scaffold, in and around which new bone is built up; and fourth, as a source of new bone. The functions of the graft as an agent of fixation and osteo-conduction are clear and obvious, whilst that of osteogenesis is problematical. But a piece of dead bone will carry out the function of fixation and conduction, and it often becomes a question whether it is worth while using living bone just for the sake of its osteogenetic power. If a gap has to be bridged, then living bone must be used for the graft, but if the pieces of the broken bone can be brought into contact and the graft buried in living bone, then dead bone may be used, and should be used, if greater strength is demanded than can be provided by a live graft.

FIG. 10.



Same case as Fig. 9 after transplanting ulna into radius.

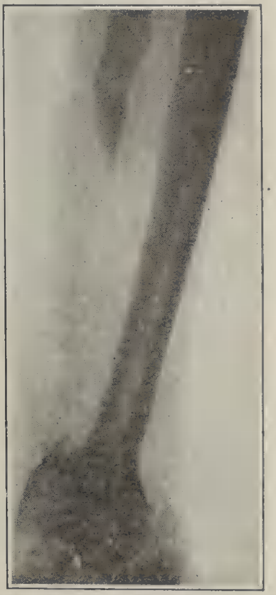
FIG. 9.



Gap fracture of radius resulting from gunshot injury in which bone grafting had twice failed.

Exactly the same principles apply to the fitting and fixing of a graft as have been laid down for the fitting and fixing of the bone ends of an ununited fracture. That is to say, wide contact with live bone, firm fixation, and efficient immobilisation. And if the graft is used to bridge a gap it must be as stout and as strong as the bone it has to replace.

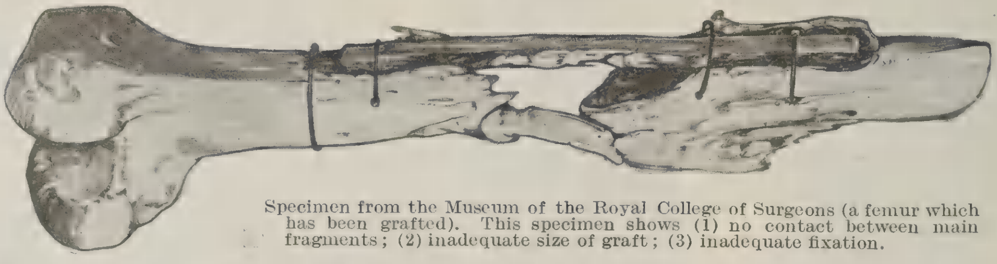
FIG. 11.



Same case as Figs. 9 and 10. X rays three years later. Strong working hand.

An autogenous graft is usually cut from the inner surface and crest of the tibia, which in an adult is capable of providing a piece of bone 8 in. long, $\frac{3}{4}$ in. wide, and $\frac{1}{2}$ in. thick. A motor-driven circular saw cuts the graft quickly, neatly, and with precision, and I have seen no evidence that the use of this instrument produces any interference with the vitality of the graft. It is not essential to take periosteum with the graft, although I think it is an advantage, because the attached membrane will help as a medium of vascular exchange between the graft and the tissues of the bed into which it is laid.

FIG. 12.

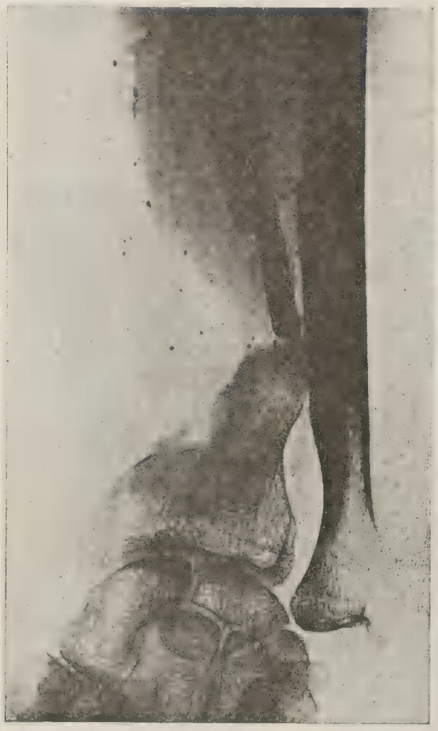


Specimen from the Museum of the Royal College of Surgeons (a femur which has been grafted). This specimen shows (1) no contact between main fragments; (2) inadequate size of graft; (3) inadequate fixation.

The fitting of the graft into the broken bone may be carried out in various ways, driving it into the marrow cavity, embedding it in the surface, or by combining these methods, placing one end in the medullary canal, and fixing the other in a slot cut in the cortex.

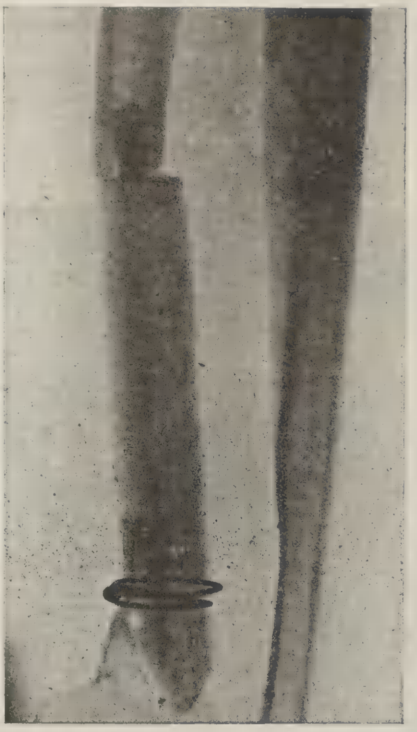
Intramedullary Grafting.—If a bone graft of suitable size and shape be driven into the marrow cavity of a tubular bone it will rapidly become consolidated with the latter. I think this admits of no doubt, and yet intramedullary grafting has fallen into undeserved disrepute because of the technical difficulty of placing the graft tightly in each fragment. This can be accomplished in various ways. The graft can be driven through the end of the bone so as to nail one fragment to the other. This is possible for a fracture near either extremity of the humerus or for one at the proximal end of the femur or ulna. Or it may be driven into one fragment, whilst the other fragment is split to receive it and then tied together with wire or silk (Figs. 4 and 5). In dealing with a gap fracture, the graft is shaped like a cricket bail, one end being driven into one fragment whilst the other is manœuvred into position by angulating the other fragment out of the wound and slowly straightening the bone whilst the graft is engaged in its cavity. Or the graft may be made in two pieces, one is driven into the marrow cavity of each fragment, and the two grafts are then fixed together. Of these various devices the thrust-and-split method is the most satisfactory, because it gives the greatest contact between the graft and the host bone.

FIG. 13.



Fractured radius resulting from gunshot injury. Shows graft too small, no contact, and no fixation.

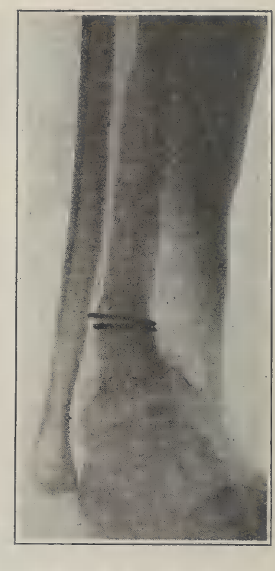
FIG. 14.



Same case as Fig. 13 with graft of adequate size and fixation.

Cortical Inlay Grafting.—In this method a slot is cut in the surface of both fragments of the fracture, and into this slot is fixed a graft which is made to fit accurately into the slot. The actual fitting is facilitated by using an aluminium plate as a template to measure the size both of the slot and the graft. It necessitates a very free exposure of the broken bone, because at least one-third of its length should be involved in the grafting operation in order to give strength and rigidity. It is particularly suited for the tibia or one of the forearm bones, because it supports one side whilst the other side is held by the companion bone. The graft is fixed in its bed by accurate fitting, by sewing the soft parts over it, or by bone nails or screws.

FIG. 15.



Same case as Figs. 13 and 14. Two years later.

Use of Beef Bone or Ivory Pegs or Plates.—If the graft has to be buried in living bone then a strong dead graft is often better than a weak living one

Thus, in a fracture of the neck of the femur an ivory or bone peg used as a nail driven in through the great trochanter will give a good result, provided that accurate apposition of the fractured surfaces without interposition of soft parts be secured. In an ununited fracture of the femur, where it is desirable not to shorten the leg by a step-cut operation, it is difficult to get a living bone graft strong enough for the purpose. In this case a pair of ivory plates (Figs. 6, 7, and 8) may be used or else a tibial bone graft may be placed on one side of the fracture and an ivory plate on the other and the two plates then bolted together.

Supplementary Bone-grafting Methods of Doubtful Value.

There are certain methods of bone grafting, founded chiefly on theoretical considerations, which must be considered briefly. These are the use of so-called wafer grafts formed of periosteum with a thin layer of underlying bone, and the employment of bone chips. In my own practice and in experimental work both these methods have invariably led to failure. I would therefore relegate them to a very subsidiary rôle in the treatment of ununited fractures. It is possible, when the fracture has been fixed by one of the above-mentioned methods, that by wrapping a piece of periosteum with adherent chips round the fracture, or by packing in little bits of bone taken from the crest of the ilium the consolidation may be hastened, but I am not clear even on this point. Certainly the process of absorption is much more evident than that of callus formation.

Bone Shortening or Bone Substitution.—It not infrequently happens that more than one operation has failed to cure an ununited fracture. If this is the case with the forearm or the leg, there is another alternative to abandoning the case or submitting it to a case-splint or to amputation. This consists in shortening the companion bone, or substituting one bone for the other. In a gap fracture of the tibia a piece may be taken out of the fibula, sufficient to allow of the tibial fragments being made to impact or overlap. In a gap fracture of the radius, in which grafting has failed, the ulna may be divided and the proximal portion implanted into the distal part of the radius (Figs. 9, 10, 11). This gives a strong, straight arm, curing the radial deviation of the hand, although not permitting movements of pronation or supination.

Causes of Failure.

Apart from certain conditions—e.g., sepsis, active or latent, or the presence of general disease or debility which prevents the success of any surgical procedure—the local cause of failure of operations done for ununited fractures may be grouped together under the following heads: 1. Inadequate contact of bone ends (Fig. 12). This may be due to the sclerosed bone or fibrous tissue not having been cut away or to the raw surfaces not having been fixed together efficiently. 2. Inadequate fixation of the fracture either by reconstructive operation, graft, or splint. 3. Inadequate grafting in respect of the graft being too small, having no contact, or not being fixed to the host bone (Figs. 13, 14, 15). 4. Inadequate splinting of the limb after operation. 5. Excessive tension. If great force is used in reducing an old fracture there is immediate danger of shock, and later, risk almost amounting to certainty, of the mended fracture being pulled apart by the tension to which it is subjected.

The successful treatment of an ununited fracture will often test your skill as a mechanic, your technique as a surgeon, and your patience and optimism as a mender of the maimed; but the results of success are well worth striving for, because they are nothing less than converting a cripple into a whole man, and if in accumulating the experience upon which this lecture is founded I have made many mistakes and encountered many failures, my sincere hope is that you may avoid the mistakes and be rewarded by unvarying success.

An Address

ON

AVENUES IN MEDICINE.

Delivered at the Opening of the Winter Session of the London (Royal Free Hospital) School of Medicine for Women

By Sir CHARLES SHERRINGTON, O.M., G.B.E., M.D. CAMB.,

PRESIDENT OF THE ROYAL SOCIETY.

ON the opening day of the session, with some here for whom it is the commencing of a profession, our thoughts turn naturally to questions of what that profession has to offer and what it demands. The perspective of the avenue along which the profession of medicine is reached has many interesting points as viewed from either end, though I can deal with but a few among them.

Here in this school I imagine all students enter the profession for no other reason than that medicine earnestly attracts them. That pledge of enthusiasm is a valuable asset for the student herself and for her teachers, as also for the school and for the profession. If we ask what ground there is for that enthusiasm, we may in the first place as practical people take this, that there are in the nature of things not so many callings open to women as to men, and that medicine can and does provide for women to-day a means of earning an independent living. The average annual earning of the medical practitioner in this country to-day is, I believe, put at between £500 and £600 a year. I see little to suppose that that estimate is not applicable to the woman as well as to the man practitioner. It is not, to my mind, a discouraging average in the era before us, which must perforce be one of national economy and fortitude.

It is an average which doubtless regards chiefly the general practitioner. Though general practice is the main path of the profession, there are other far from negligible though relatively exceptional ones. There is consulting work and there is specialist work. Some of those present here to-day brilliantly exemplify the success in these that is attained by women. There are also medical branches of Government service, and I need not name to you women, and from this school, who hold distinguished and responsible positions in those services. Dame Janet Campbell, a senior medical officer of the Ministry of Health, we remember, is a former student of this school. And there are, further, other public services as well, municipal and county posts. Perusal of the list of registered medical women, former students of this school, show how considerable a number of such posts are occupied by them.

But no more than does it satisfy man shall it satisfy woman to live by bread alone. Bread alone will not account for enthusiasm in the choice of medicine as a calling. Medicine has been termed with some justice a poor trade; but at the same time it is known as a noble profession. If we can justify this latter belief it is a truer source for enthusiasm. And it is a claim that can be justified on many grounds.

Medicine a Progressive Science.

One of these grounds, though I do not say the main one, is yet a memorable one, and rises early to my mind. Medicine is not only an honourable art but a progressive science. In this respect it is an exceptional calling; indeed, among callings available for women it stands in this respect almost alone. Like it engineering is at once a science and an art; but engineering is not a profession available for women.

Those two professions, medicine and engineering, typify in the work-a-day world and for the thoughtful historian what the modern growth of science is doing in the modern world. It is to underrate their significance in modern life to suppose that these influences are increasingly changing merely the outer features of our surroundings. They are changing and developing the inner features also—the mental outlook and the range of life. And if to engineering science be due those of these changes which most catch the eye, to the advance of medicine are due developments as far-reaching and beneficent, and, to the initiated even more than to the uninitiated, fraught with meaning for human welfare, and are a source for enthusiasm. The swift forward moving of medical science in this present may assuredly stand to the future historian as the outstanding mark of the progress of civilisation in our era. A woman who has yearning to enter to the uttermost into some strong current of the abiding progress of the time we live in, and to feel and understand it, and to play a rôle in it, can rest assured that to enter medicine will give her opportunity for that, and in the fullest and most beneficent of ways.

At risk of repeating before an audience already well aware of them things that are commonplace knowledge even outside the profession, may I instance the speed of medical advance by mentioning a few outstanding points which medicine has attained within less than living memory.

Take the diseases distinguishable as infective. To know them as such is the beginning for the control of them. Tuberculosis and malaria, those two scourges of mankind, have in the last 45 years been opened to such control. A further key to mastery over infectious disease is to get disentangled hold of the particular infective agent. The last 40 years have seen that done for diphtheria, glanders, cholera, tetanus, Mediterranean fever, yellow fever, plague, dysentery, and syphilis. Through the long ages of its previous history medicine had travelled without in one single instance achieving such a step. Hippocrates, father of medicine, had he done so would have been reputed a god; more important, he would have changed the course of human history.

On the heel of such specific discoveries have followed the modern knowledge and employment of immunity, proving, if further proof were needed, the rightness of Jenner's vaccination against small-pox, by elucidating the principle on which it rests. Pasteur began to vaccinate—he called it so, in tribute to Jenner—against bacterial disease by inoculating with the specific bacteria attenuated. What lessening of human and animal suffering date from and because of that step of only 42 years since. In recent eloquent witness stand the statistics of control over typhoid obtained for the armies in France by vaccines introduced by Sir Almroth Wright and extended by Sir William Leishman. Then there is the whole relatively new subject of serology, potent for prevention, for remedy, and for diagnosis. Diphtheria has been largely robbed of its terrors, though Roux and Yersin's work on the diphtheria toxins dates to not 30 years back.

And the progress goes forward, with change, but no sign of halting. Thus, the intriguing bacteriophage, which seems a germicidal subgerm. Again, the new step of knowledge in regard to cancer, stressing the interaction of essential causal factors, and the yet unexhausted power of the microscope for discovery. The invisible viruses are beginning to be made visible.

And, infectious diseases apart, progress of the past five years has turned the position in regard to rickets. The enemy forces have been located. They are recognised as two—deficiency from diet of an elusive substance traceable to the plant world which is based on sunlight, and deficiency of sunlight itself. An era has begun when child-life can be saved from a crippling disability. And in this victorious campaign women have borne a conspicuously important and distinguished share. Then, again, the discovery of insulin came but three years ago, and it is now alleviating cases of suffering the civilised world over. Such instances, taken almost at random, surely justify enthusiasm.

It is difficult for the student or the medical curriculum to find time for all the student has to learn. Introductory science has perforce to be curtailed because it is introductory. Economy of time can be obtained by getting as much as possible of the introductory science done in ordinary school years before coming to the medical school. This is the more advisable because these scientific subjects are to-day essential to general education. We all know the disabilities, conversational and for citizenship, which adhere to otherwise educated people by reason of lack of school instruction in such science as should be part of common knowledge. But wherever and whenever the adjunct sciences are taught with a special view to medicine, it should not be forgotten that for application of them to medicine it is the principles not less than the ad hoc facts which are required. The former rather than the latter enable the student when she or he leaves tutelage to breast not only the scientific applications of that particular date, but to follow for herself professional developments of the future which shall depend on science. That ensures a progressive practitioner instead of maybe a reactionary one. I wish some time could be found in the curriculum for the teaching of the principles of scientific psychology.

And with regard to the sciences dealt with later in the curriculum, they are a part of medicine itself. Differentiated as they are necessarily and dealt with by separate specialist teachers, it is to be remembered that they are from the point of view of medicine essentially one, although separately designated. Therefore, as you study them the more you make them overlap and interlap—histology, anatomy, physiology, biochemistry, bacteriology, pathology—the better will you grasp all and each. Of reasons why that should be so, one is that disease is but disorder of health. Over and over again the normal and the abnormal merge one into the other by degrees practically imperceptible.

The Meeting of Science and Art.

In medicine, two aspects—namely, those of science and art—meet; at their extremes they are clearly distinct, but their mutual boundary is untraceable. As to what science is and what art is, let me take refuge in saying that all definition is notoriously difficult and that comparisons are odious. Bandaging, I think, I have seen in some hands an art and not a science, and yet in others both an art and a science; and possibly in others a science but without art. Science pursues knowledge for the sake of knowing the how of a result. Perhaps Art uses knowledge for the sake of a result without caring about the how. Science has laws, which, unlike some laws, are unbreakable. Hence Mr. Bateson's wise advice, "Cherish your exceptions." In Nature every seeming exception is but obedience to another law. With Art laws are on another plane—even in the fine arts. The laws of the romantic school of yesterday were not the laws of the classical school of the day before. The laws of the Cubists to-day will not be the laws of the Futurists, perhaps Polygonists, of to-morrow. Hence medicine which has become scientific is more stable than medicine which has not. Fashions of bandaging may change, but the principle of asepsis abides. Science and art dovetail in medicine; that is the real point of importance, not any impossible attempt to distinguish them minutely. Art where skilfully efficient unconsciously adopts measures science would endorse. And it is a mistake to suppose, as seems sometimes done, that the divisions between science and art in medicine correspond with division between the laboratory and the ward. Science can enter into the handling of a case in ward or out-patient room as fully as into laboratory observation or experiment. Last year the Harveian Oration by Sir Archibald Garrod and Sir David Bruce's Presidential Address to the British Association in Toronto pointed out that medicine, while owing much to science, has also given to science immensely. In medicine the clinical and the laboratory studies support and fructify each the other. They flourish together or but little. But the finance of both is difficult, and especially, I think, for the laboratory. Higher education belies the old precept that a venture which deserves success will pay its own way. Higher education never pays its own way. It is said that American colleges spend on each medical student £100 more than the fee receipts. Such a situation endorses and commends the appeal made by this school for a fund to endow some of its laboratory professorships, anatomy, physiology, and pathology. This is a University school, and its laboratories are in that sense University laboratories. Distinguished teachers direct them. Endowment is necessary for such Chairs. The eloquence of the circumstances ensures the success of the appeal; and I hope quickly, for the need is urgent. A fine lead was given last year by devoted friends of the school, including Lord Riddell, who has also so generously helped the hospital itself. And help for the physiological laboratory has come from the Augustus and Alice Waller Memorial Fund, a memorial especially appropriately connected with this school and with research. The laboratories of the school have already won repute as places of research. An element for success in research is the putting the right question to the problem. The astounding research capacity of Pasteur himself lay perhaps as much in asking the right question as in his genius for developing and ripening the latent possibilities of laboratory means. Splendid intention is futile if for the question it puts the time is not yet really ripe. This must be borne in mind in the coöperation for research between laboratory and clinic. Experience shows, I think, that with laboratory and clinic each puts its own question best, knowing its own best means. Both can have a common problem, as in the recent success with rickets, and both can have a common strategy; but the tactics of the two are better independent.

Men and Women in Medicine.

Increasingly noticeable in medical research is the tendency towards team-work—a change probably impressed by experience in the late war. In a research team each member takes one part and all parts simultaneously conspire towards a single aim. This plan seems destined to replace advantageously the individual less coördinated effort toward medical discovery in the past. Coöperation is a proper and happy counterpoise to the competition which is perforce so large a rule in life. Team-work accomplished the glorious cathedrals of a former age; in an age of scientific medicine it may rear spiritual edifices no less glorious. I fancy women combine readily for team-work, and are specially fitted to play in it an eminently important rôle, and preferably in coöperation along with men. The very contrasts between man and woman help each to eke out and amplify the powers of the other. Galton arrived at types of family physiognomy by compounding photographs of individual faces. To combine in that way faces of women and men doctors might yield a composite prophetic picture of the ideal physiognomy of the profession. Not that physiognomy consists in features of the face alone. Craniums also can, of course, be long or round. There are, as we all know, modest shoulders and shoulders that are arrogant, elbows egotistical or accommodative. These all both in man and in woman. Woman and man are not wholly unlike. There is something of man in woman, and something of woman in man. The existence of this school and its success show, I think, that woman's due and right place in medicine is won not by her aiming at man's particular qualities, but by her using and training to medical purpose the gifts of her own womanly nature. To me seems regrettable the London County Council's recent regulation that married medical women are ineligible for its medical officerships. I have seen it estimated that about 30 per cent. of medical women marry. That, however, is a lower percentage than is obtainable from the list of former students of this school.

The cause for which this school stands is assured. That women should enter medicine and practise it is but a further and most natural evidence of what we have been talking of—the progress of medicine. But those who go first often have to walk somewhat lonelily, and find their path less free than those who follow. This school does well, therefore, to remember with pious honour those who led the way. Social adaptations come slowly. An elder generation tends to hug old opinions. Truly progressive cannibals eat, it is said, their oldest relations. But I am not sure that that is a complete remedy. Reform is rarely facile. It is not, as Rousseau taught, a simple return to nature. Perhaps, like the ancients, he thought us descended from the gods. But after him came Darwin. It is a long ascent from the grimaces of the ape to the smile of Monna Lisa. But one sex has accomplished it, and it speaks to the comfort of both. A mere man, I have myself had homely reminder of mental kinship to primitive forbears. When my laboratory kept chimpanzees I used to pay a daily visit to them at large in their room. Once after such a visit, when I had just left and locked the door, I turned back again, pondering what the chimpanzees might do when I had left; I stooped and looked through the keyhole. A chimpanzee's eye met mine peering through the keyhole. The same thought had struck us both, both her and me—she, as a lady, had acted first. When the human community about you seems slow in development, recall my case. Surely it is encouraging that despite my mental resemblance to simian stock the convincing logic of your cause stands plain even to me.

The Traditions of a Medical School.

But to return to this school with its tradition of noteworthy names in the past, and no less noteworthy still with it. One of the things that it has proved is this: that women are well able to fulfil the expanded social duties it trains them for. And the fulfilment of those duties involves more than solely the science and the art of medicine. Every case of sickness is as well as a problem for medical science and art, a fellow creature's suffering. Of all grounds ever taken surely the strangest is that of the man who when refused by a young woman resolved to enter medicine in order to harden his heart. The impression, if it exist, that medical routine tends to blunt feeling is wholly mistaken. Egotism may harden the heart, but knowledge never. Character is what counts. Medicine enhances compassion and instruments it by giving it further resources wherewith to help and comfort a sufferer. As to the danger from the alleged coldness of intellect, as medicine leans more upon science, pure science, it is true, is intellectual, and pure intellect is somewhat like that supreme instrument arisen from it, mathematics, which works best with the abstract—in vacuo, so to say. But at the bedside the "case" is always concrete, and rescues feeling. Moreover, though science may be infallible, not so its votaries, as none know better than they. Science then teaches humility, and humility is close to sympathy, and one essence of successful medicine is sympathy armed with understanding. Sympathy armed with understanding, that surely is a trait that medical women stand for. To those who possess that, what opportunities does not medicine afford of beneficence to the community. To those who by reason of enthusiasm for medicine are entering upon it here, I would affirm that their enthusiasm is well founded. I trust I have not kept you too long in arguing towards so self-evident a conclusion.

An Address
ON
TRADITION IN MEDICINE.

Delivered at the Opening of the Winter Session of the Middlesex Hospital Medical School

By C. E. LAKIN, M.D., F.R.C.P. Lond., F.R.C.S. Eng.,
PHYSICIAN TO THE MIDDLESEX HOSPITAL.

There are three days in a physician's life which may be said to be unique. There is the memorable one upon which he is elected to the staff of his hospital, a day of unalloyed happiness and pleasure; then there is the day of gloom when the time limit sounds his departure from the activities of the hospital; and the third is one like to-day when he gives the introductory address and feels rather like the mariner about to cross the equator for the first time, hardly knowing whether he is quite likely to enjoy all that Father Neptune has in store for him, whether the crowd of onlookers will be sympathetic, and whether his performance may not end in catastrophe. Still it is the tradition of our hospital that this must be faced, and in confronting it one is naturally brought up against the question: What is there in tradition that it should have such a powerful hold upon us?

We are living in an age of rapid transition and of suspended judgments, and those who are familiar with Chekhov's Cherry Orchard, in which is seen depicted the pathetic inability of the older generation to cope with the pressing circumstances of the present, may well ask. But is not tradition crippling us on every side? One must freely admit that there are elements of danger in tradition, but that is not to concede that tradition itself is valueless. Without it chaos replaces order and experience never attains fruition. Each generation must be provided with a starting-point and for this continuity with the past is essential. But tradition itself is not stationary, it is always suffering change. Although at any one moment it may be said to be fixed, at the next it is not quite the same. It is in some degree subject to flux and possibly in increasing degree with the passage of years. It may be observed that the human mind, on the other hand, tends to become less elastic as our years creep on. With few exceptions the older we become the more conservative tends to be our outlook. To such an extent is this true that some see in this very fact the necessity of death in the economy of Nature. Death is Nature's way of evading stagnation.

Now the danger of tradition is found in its power of establishing a prevailing opinion which in itself is antagonistic to further advance. As long as the chief place in medical tradition is assigned to observation, experiment, verification, and induction, this danger is but slight. Medicine has no creed as such to preserve. Its system of knowledge is but the accumulation of facts which have been ascertained by the application of the scientific method to the study of the body in health and disease. By scientific method, if for one moment I may labour the point, we mean observation, experiment, and verification. It has been well said that the mind of Sydenham, interested in a sick child and humanely pre-occupied with its cure, did not, in so far as it functioned scientifically, operate differently from that of Galileo interested in the movements of the earth. Both alike reflected, verified, and generalised.

But tradition is more than medical lore and the sum total of medical science. Just as in another sphere we talk of a manner of living or way of life distinct from life itself, so in medicine there is a setting in which medical knowledge is enshrined. This is as difficult to describe as is the tradition of a public school or the esprit de corps of a regiment. Like so many of the finer things in life it evades explanation and vanishes into thin air as soon as one tries to take hold of it. It is this elusive atmosphere of which I would attempt to speak to-day to those of you who are about to start your medical studies. To dissect so subtle an influence were almost impious, but if we attempt it hero-worship, historic association, love of beauty, truth and goodness, and the tears and strivings of men will all find a place there.

Who can remain unmoved by the story of William Charles Wells? Wells was a medical man, who like so many others at the beginning of the nineteenth century, had taken to medicine as a means to a livelihood, in order to devote his spare time to the physical sciences. For save in mathematics there were practically no university chairs or emoluments in England open to students of biology, chemistry, or physics. In what follows I borrow freely from the account which Dr. Arnold Chaplin gives of Wells in his FitzPatrick Lectures, delivered before the Royal College of Physicians in 1917–18. Wells began his career in London penniless, and after 16 years of toil was unable to command an income of more than £307 from all sources. Ill-health dogged his steps, and in his forty-third year he was seized with a slight stroke and henceforth it was a grim fight against time to finish the work he had designed. In spite of these disadvantages he laboured on bravely in his humble lodging in Serjeant's Inn, known to few save five close friends, among whom were to be counted Matthew Baillie, David Pitcairn, and David Hume. The name of Wells will be for ever honoured, for he succeeded in investigating and establishing the laws which govern the formation of dew, leaving little to be added by subsequent research. Wells carried out his experiments in the garden of a Mr. James Dunsmore, a merchant friend of his, who lived in Surrey, three miles beyond Blackfriars Bridge. Thither Wells betook himself in the late afternoons, and using pieces of wool of known weight, weighed them again after they had absorbed the dew in various situations and under varying conditions of atmosphere. It is a melancholy picture, this last effort of his, labouring to finish his experiments by night in Dunsmore's garden and trudging home with dropsical legs in the early morning hours to record his results lest death should claim him ere his task was ended. Surely few investigators have battled more bravely with adverse conditions. When his work was accomplished he desired only the modest epitaph, "He tried to extend the bounds of knowledge."

> "Man with his burning soul
> Has but an hour of breath
> To build a ship of truth
> In which his soul may sail.
> Sail on the sea of death,
> For death takes toll
> Of beauty, courage, youth,
> Of all but truth."

Of such stuff is medical tradition made. Wells's medical investigations were chiefly concerned with dropsy and uræmia and have scarcely received the consideration they deserved. It may be remembered that Charles Darwin, in his historical introduction to the origin of species, gives to Wells the credit of having been the first to enunciate the principle of natural selection in a paper read before the Royal Society in 1812. The names of Thomas Young and William Hyde Woollaston occur to us as other instances of physicists who have practised medicine. Young, who was responsible for the undulatory theory of light, it is interesting to note, lectured in our hospital before the school had been founded by Charles Bell. There is a letter of Bell's which I feel I cannot pass by in silence, giving a picture, as it does of his early days in London:

"Coming to London with the resolution to fix myself here was certainly a desperate measure, for I had formed no friends, and absolutely did not know a human creature, When I consider the few introductions I had—to men who could be of no assistance to me—I look back with something like a renewal of the despair I then felt. My first object was to introduce myself to the several schools, with the expectation of being taken as an assistant by one or other of the chief teachers. Cline and Cooper were lecturing in the Borough; Abernethy, with his assistant Macartney, in St. Bartholomew's; Sir William Blizzard and Mr. Headington in the London Hospital; and Mr. Wilson in Windmill-street, in the school of the Hunters.

"I could see that a great deal was to be done, but where to find a resting-place? How show my capacity for teaching or illustrating my profession?

"These days of unhappiness and suffering tended greatly to fortify me, so that nothing afterwards could come amiss, nothing but death could bring me to a condition of suffering such as I then endured. There was a little romance with it too. I found myself so cut off from the society I should have wished to cultivate, and which I thought I deserved, and so alone in this world, that I entertained myself with fancies as to what set of people, and what family, and what place, it was likely Providence was to unite me to.

"In short, I believe I was as romantic as any young man could be, although the prevailing cast of my mind was to gain better celebrity and independence by science; and perhaps this was the most extravagant fancy of all.

"I never thoroughly hated London while I could lose myself in it. I had a pleasure in wandering through streets I did not know; but at last it appeared to me to consist of insignificant parts almost infinitely multiplied.

"I was not idle, however, all this time. I had a subject of study always with me. I was preparing my Anatomy of Expression, and made some anatomical studies in the Westminster Hospital.

"I could not help regretting the noble fields that were everywhere around me for exertion in my profession, and which I found closed against me.

"One night I resolved to return to Edinburgh. I went to the opera, to leave the last pleasant impression of London. I could dwell upon my feelings of that night, but few could sympathise with them, and next morning I resolved to remain in London. I took a large ruinous house in Leicester-square, formerly inhabited by Speaker Onslow. When I went with my surveyor to examine it, I was somewhat appalled by his account; he was a great John Bull rough fellow. Leaning out of the window, and observing the walls out of their perpendicular, he said in a coarse familiar manner, 'Sir, you had better have nine bastard children than this house over your head.'

"In taking this step I was conscious I must withdraw myself from such society as I could have loved, and here I gave myself up exclusively to the teaching of anatomy. Such were my miscalculations, that my expectations of a large class were sadly disappointed. It was years before I had 40 pupils to lecture to.

"When I got into this house, the first night I slept in it I had put out the candle and was leaping into bed, when the floor gave way under my foot, and I found I had displaced the board. On examining this in the morning I discovered a tube under the loose board—it was the house where the Invisible Girl exhibited!

"A man brought up as I had been in Scotland has certain notions of respectability, which are very strong and very peculiar. I don't know that at any time I was more depressed than when I found the sort of house I had got possession of, but it was one of those absurd errors into which a stranger in London falls. Before taking it I had been provoked with the opinion of everybody I consulted about my plans, their lowest estimate being that of £10,000 to set me agoing. Even yet I am not rich enough to boast of my poverty."

While medical tradition transcends all geographical boundaries it is in our hospitals and medical schools that she has her special dwelling. A hospital and medical school is something more than a block of buildings where instruction is meted out to students. At Middlesex I have sometimes thought that I have caught sight of the genius loci—the prevailing deity—on the way up to my wards. He is an old man with a white beard and wrinkled face, but in his eyes is the twinkle of perpetual youth. He has usually been standing at the turn of the staircase or on the landings, and as our little procession to the wards approaches I have seen him put his fingers to his lips while all his attention is given to those behind me. It is as if he is picking out his votaries to entice them into his realm, to study with him clinical medicine in the wards of the hospital.

If the blood of the martyrs is the seed of the church, the devotion of the hearts and minds of Middlesex students is the glory of the school. A medical school is not a technical school, and it is because I wish those of you who are joining us for the first time to-day to know something of the spirit of the place that I have been speaking in the way I have to-day. Some of you have come from the older Universities and may, like the scholar gypsy, have walked by Godstow and Bagley Wood, and, unlike him, in high talk have discussed all things in heaven and earth, plumbing the depths of speculation in a world where speculation rightly takes the place of experience. Here, you are suddenly, perhaps too suddenly, brought face to face with reality and your university education continues with a difference. Take note of the motto of your hospital *Miseris succurrere disco*, and in learning to help the wretched you will see that you yourself are undergoing development. Read the legend over the entrance to the post-mortem room, *Hic locus est qua mors gaudet succurrere vitae.* Here is the place where death rejoices to help life and you will come to appreciate the amazing healing power of Nature even to the last. Scorn delights and live laborious days and you will find the world of knowledge has its enchantments. It is not the platform but solitude where true work is done, and I never tire when I feel that we are becoming a little Americanised of thinking how from a small ward of nine beds, with no special facilities, Vesalius taught surgery to Europe. Thank heaven! medical tradition at any rate has nothing to do with propaganda, publicity, and newspapers!

Do not be discouraged by the exactions of the profession you have chosen. The more conscientious may ask: Ought I not to let everything go save my immediate studies, since to me are to be entrusted the lives of my fellows? The question is sufficiently plausible, but the answer is emphatically No. You must first be a man and then a doctor. You must learn to live in the present and to understand the entourage and mental outlook of your patient, and how will you do this if you become simply immersed in study?

Middlesex man as I am, on an occasion like the present, I cannot end without paying homage to those of my friends and yours who so nobly upheld our hospital traditions in the late war. In dying they put on immortality, being silent they yet speak, and have left behind an imperishable memory that needs no memorial:

"Sons of this place of you let it be said
That you who live are worthy of the dead,
These gave their lives that living you may reap
A nobler harvest ere you fall asleep."

Spa Treatment for Panel Patients.—At the autumn meeting of the British Spa Federation held last week at Woodhall Spa the question of spa treatment for insured persons suffering from rheumatic diseases was further considered. British spas are, it is stated, unanimous in their desire to see the benefits of mineral water treatment made available for those who have hitherto been unable to afford it, and a special subcommittee consisting of representatives of Bath, Buxton, and Harrogate was appointed to work out practical details satisfactory alike to the insured patients and their doctors, and without interference with the routine and comfort of the ordinary visitors.

Leeds Voluntary Hospitals Committee.—This newly formed committee has already induced 1085 firms in the business centre of Leeds to join the scheme; a further 3000 have still to be heard from. The promises of subscriptions thus obtained aggregate close upon £7000. A large number of insurance companies and companies owning multiple shops have refused to come in, on the ground that they have so many branches in different towns that to subscribe to the local charities in each would constitute a heavy drain, and that they could not subscribe in one place and not in another. It is, however, felt in Leeds, and probably in other towns, that firms who drive out local shopkeepers who were subscribers to hospitals ought to be prepared to "pay their footing."

An Address

[ABRIDGED]

ON

THE MEDICAL CAREER.*

By Sir HERBERT F. WATERHOUSE, M.D. Edin., F.R.C.S. Eng.,
CONSULTING SURGEON TO CHARING CROSS HOSPITAL.

[Sir Herbert Waterhouse began by saying that for over 33 years he was a member of the staff of the hospital and of the medical school. During that time, at various periods, he held every position open to a surgeon and also those of dean and of chairman of the medical school and the hospital, and its branches were amongst the greatest interests in his life. The school was to be warmly congratulated on its present Chairman, Sir George Verity, whose success in freeing the pathological department from debt was already sufficient claim for gratitude. He continued :]

I can honestly congratulate you on your choice of a profession because you have chosen one in which you can help your fellow men and women, can lessen their burden of sorrow and suffering, can earn their esteem and affection, and can assure yourself of a fair competence when the time comes for you to retire from practice. If riches had been your quest you would have gone in for trade, certainly not for medicine. In joining the medical profession you can, at the most, expect moderate financial success, but this is, I am convinced, more safely to be reckoned upon in the profession of medicine than in any other of the great professions. The sick we have with us always and there is ever work for a good doctor. We have nothing comparable to the briefless barrister or to the clergyman, who, though an old man, still remains a curate. But if an adequate reward for your labour may fairly be expected in our profession, your preparation is far longer and far more strenuous and exacting than that for any other profession. You will, for the next five years or more, have to "scorn delights and live laborious days" if you are to attain that standard of knowledge of your professional work that alone can fit you to take charge of the lives of your fellow men and women. In some other professions a fair amount of knowledge may suffice to ensure success; in ours nothing short of the best is justifiable; the stakes for which you play are human lives, sacred in the sight of God and man, and this is the day on which to determine that you will do your utmost to fit yourselves for your high calling.

The school you have joined will do its part to help you, and, if you equal the record of the best students of this school in recent years, you will have every reason to congratulate yourselves. Within four years I was fortunate in having as my house surgeons three of the most brilliant young surgeons I have ever known—Messrs. W. S. Fenwick, Norman Lake, and C. J. Marshall—all Charing Cross men. Among the distinctions gained by this brilliant trio were two gold medals at the final M.B., B.S. London examination, one gold medal and one qualified for the gold medal at the M.S. London, one gold medal at the M.D. London, the degree of D.Sc. London, and the Murchison prize in clinical medicine.

I doubt if any medical school in London ever, in so short a period of time, produced three abler men. Mr. Fenwick, to our extreme sorrow, was forced by ill-health (now happily recovered from) to leave us, but Messrs. Lake and Marshall fortunately remain and both are sure to add further to the reputation of the hospital and of the medical school.

It is a pleasing fact that, in the study of medicine, each succeeding year is less of a drudgery and more interesting than the previous year. During your earlier years you will find the study of anatomy wearisome and dissecting somewhat unpleasant. I urge you not to neglect this very foundation of professional knowledge. A good knowledge of anatomy can only be acquired in the dissecting room, and careful dissection alone will teach you how to find your way about the human body. One of my old teachers used to say that surgery is merely "common sense applied to anatomy" and there is more than a germ of truth in this dictum.

With regard to the subject of lectures you will hear it stated, not infrequently, that lectures are useless. I certainly do not hold this view, though I admit that I thought they were over numerous in my student days. The greatest merit of the 9 o'clock lecture is to compel an early start, and I would advise you to keep your reading always a few days ahead of your lectures. If you hear a lecture on a subject which is new to you, you will of necessity fail to assimilate many points. If you have read the subject up a day or two previously you will derive infinitely more benefit from the lecture. It is only when you start your clinical work at the hospital that you will begin to appreciate the real fascination of the study of medicine. Your earlier years of study will have been the somewhat tedious preparation for the foundation of your clinical knowledge and you will now be entering on your real life's work. I would advise you to attend your physician and your surgeon in all his visits to the hospital; the student who flits from one clinical teacher to another will doubtless learn much of value, but he will not see the same cases treated throughout the whole of their stay in hospital, and will not attain the same personal knowledge of disease and its treatment. If you are constant in attendance upon the teacher of your choice, you will, insensibly, follow him in his mental processes and will find yourself doing almost instinctively what he would do in like circumstances. I can speak from experience. I had the good fortune to be house surgeon to one of the greatest surgeons of all time—the late Sir William Macewen. For six months I studied his great intellect as closely and as devotedly as I was able to do, and, in later years, I have often found myself doing something almost instinctively, and, when I pondered over the question, I found that I was following the example of my great master.

During your final year I would urge you to devote particular attention to the special departments, particularly to those for diseases of the eye and of the throat and ear. These important branches of surgery are usually neglected by students to the detriment of their patients in later years. These remarks apply particularly to diseases of the eye, in some of which a few hours delay in instituting appropriate treatment may result in permanent damage to the sight. It has been said that the fear of examinations is the beginning of wisdom for the medical student. If every surgical examination paper contained a question on diseases of the eye, throat, or ear, these important subjects would soon cease to suffer neglect. As soon as you have qualified and registered, you will do well to join one of the medical defence societies. While you will find the large majority of your patients grateful and appreciative you may come across one who is cantankerous and inclined to litigation, and such persons have no difficulty in finding solicitors to encourage them. They seem to expect that bad fractures into joints should always give perfect results and, if they are disappointed with the issue, they blame, not the injury, but the unfortunate doctor. Such people do not sue their lawyers or stockbrokers when their advice has turned out badly. They seem to specialise in actions alleging negligence against their medical adviser. I have, for some time, been a Vice-President of the Medical Defence Union, and can tell you that 30 members, on an average, seek advice and assistance of the Union at the meetings of its executive, frequently after the receipt of a lawyer's letter alleging negligence. The vast majority of such complaints have no foundation and are disposed of without further trouble. Everyone makes mistakes except the fool and the liar; the former cannot see his mistakes and the latter denies them. In any event it is a great relief to know that you have behind you powerful support and protection, and that you are insured against any possible financial loss in the unlikely event of a verdict being given against you. From close personal knowledge I beg you not to neglect to join immediately one of these protection societies.

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* Delivered to the students of Charing Cross Hospital at the opening of the Winter Session.

Next, I strongly advise you to try to obtain a resident appointment as house surgeon or house physician (or preferably as both) in your own hospital, or, failing that, in another large institution. It is impossible to over-estimate the value of such a post. Not only will you see a large number of interesting cases, but you will have the advantage of making your diagnosis and of forming your opinion as to how each case should be treated, and then of having your views confirmed or corrected by your senior officer. I have never known anyone consider as wasted the time spent in holding resident hospital appointments, but I have, over and over again, heard men regret that they had failed to take advantage of the opportunity of obtaining such posts. Having, as I hope, spent a profitable year as a hospital resident, I would now urge you to study, for at least one session, abroad. When I was a student, in the late 'eighties, it was a very usual thing for a recently qualified medical man to devote several months to study on the Continent. I had the good fortune to spend a winter session at the University of Göttingen. This time of foreign study widens a man's mental outlook and helps him to get rid of many of the traits of our insularity. I found it most helpful and would earnestly recommend it to your attention. It is, moreover, an enormous advantage to a medical man to have a sound knowledge of French and of German. I have read most French surgical text-books and several in German, and I can testify to the advantage I have derived from them. I would advise you, throughout life, to continue your study of these two languages, so important for scientific medicine.

If you follow out the course I have above indicated you will be well equipped for your life's work.

Some of you will, doubtless, strive to become specialists, but the large majority will be content with the rôle of general practitioner, and the really good general practitioner is the highest development of our profession. It is comparatively easy to know practically all that there is to be known about one branch of medicine. It is far more difficult to know, as some first-rate general practitioners with whom I am acquainted certainly do know, almost as much about every branch.

Among my personal friends two of the ablest are general practitioners in South Hampstead. One is a doctor of literature, of laws, and of philosophy of the University of London, in addition to holding a doctorate in medicine. The other is an M.D. London, F.R.C.S. Eng. On the many occasions I have met my two friends in consultation, I have always felt that they knew about as much of surgery as myself and more of every other branch of medicine. I can safely say that I have learned from them far more than they can have learned from me. If these able men are content to remain general practitioners you may well be so.

For what are the requirements that go to make first-rate general practitioners? There are three desiderata: (1) A thorough knowledge of medicine in all its branches; (2) the faculty of inspiring confidence in your patient; and (3) sympathy.

Granted all these three, a successful and beneficent career is a certainty, and lack of any of them will gravely hazard your usefulness. Obviously the most important is the first, but the faculty of inspiring confidence is an essential requirement, and is most helpful to your patients.

How often do we not hear it said: "I have no confidence in Doctor X." Or: "Doctor Y has assured me that I shall pull through all right, so I am quite happy." Poor Doctor X and fortunate Doctor Y. The latter may have less knowledge than the former, but he has his patient's confidence, and that, in many cases, is so often half the battle. We all know men who inspire much confidence and deserve little; men, who, judged professionally, would be weighed in the balance and found wanting—and we know, also, men of brilliant intellect who can make no real headway in practice because they lack this faculty to inspire the confidence in their patients. It is partly a gift, but it is a gift, in a large measure, capable of development. I wish to impress upon you that before you can expect to inspire confidence in others you must have confidence in yourself, and this can only come with knowledge. If you have full confidence in your diagnosis and treatment it will be easier to impart this confidence to your patient. Strive always to gain the confidence of your patient, even from the time you are a dresser or clinical clerk. If you succeed with the charwoman from the slums you will not fail later with the countess in Mayfair. I would venture to urge upon you the importance of learning to express your opinion shortly and to the point. Nothing will help you more to attain this object than joining in the discussion of your medical and debating societies. Here you will learn to say what you have to say clearly and accurately, well knowing that you will not escape criticism from your fellow students should you fail to do so. In this way, as in many others, you will find the best of your fellow students among your best teachers. Remember always never to treat your patients as if they were fools. The vast majority of them are not, and they, during their time of illness, have plenty of leisure to ponder over what their doctor has said to them. The danger of being too chatty is that you may forget what you have said on a previous visit and may say something that may seem to contradict a statement previously made by you. When you are certain you are right say little, when uncertain say less.

Sympathy is the third of the desirable qualities that go to make up my ideal practitioner of medicine. It must, however, be sympathy combined with firmness, and mere sentimentalism is of no use. You should convey to your patients not that your heart bleeds for them, but that you are genuinely interested in themselves and their maladies; that, for the time being, theirs is the most important case you have under treatment; that you mean to devote your best endeavours to its cure and that you bring encouragement and hope of recovery from the illness. But blend your sympathy with firmness and decision, and remember that kindness and tenderness are duties that strength and health owe to frailty and sickness.

I have now come to the end of my advice to the new entrants, who are starting on a journey that is strenuous and exacting. Some, but I hope very few, will fall out by the way, but be certain that patient, intelligent effort will always be successful. The medical profession is one which offers joys that are worth gaining and that no other can afford.

ALEXANDRA DAY.—The collections on Alexandra Day (June 10th) produced £45,088, and the expenses to £7635, £5940 of which was the cost of the roses made by cripples. Queen Alexandra has earmarked £10,419 for institutions in which she is especially interested, and £27,555 will be distributed among various hospitals and charities.

THE LATE R. T. HUGHES.—Robert Thomas Hughes, M.R.C.S. Eng., L.R.C.P. Lond., formerly in practice in Higher Tranmere, died suddenly on Sept. 28th. He studied at Owens College, Manchester, and at University College, Liverpool, and qualified in 1895. He was medical officer of the Birkenhead Union and one of the best known medical men in the Tranmere district. He was a Lieut.-Colonel in the R.A.M.C. (T.) and saw lengthy service during the war. Dr. Hughes was in his fifty-third year and leaves a widow, four sons, and a daughter.

STABLE NERVOUS CONTROL IN RELATION TO FLYING EFFICIENCY.*

BY MARTIN FLACK, M.B., CH.B. OXF.,
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(*From the Medical Research Laboratory, Royal Air Force.*)

A MEETING such as this affords opportunity for discussion of the conclusions reached by those who for several years past have been concerned in the study of the human machine in relation to flying. No doubt, considerable difference of opinion may exist as to what are the chief characteristics which make for efficiency as a pilot, and, in consequence, on the best methods to be employed for the selection of personnel for piloting duties. It may be that such difference of opinion, if it exist, is due in part to difference in racial temperament and so forth, therefore it is not suggested that the conclusions formed in respect of the British are necessarily applicable to pilots of other nationalities. Such a conclusion could only be definitely reached if the same characteristics were found in the exceptionally fit and able pilots of all countries. The method of investigation pursued in Great Britain has been to study the characteristics of the most satisfactory pilots selected by the executive, and to contrast the results so obtained with pilots who have not been so successful or who have definitely been unsuccessful.

The main point of this paper will be to emphasise the fact that all-round success in flying is definitely associated with stability of nervous control, particularly of subconscious nervous control, and that in the selection of personnel for flying duties particular attention must be paid to this point.

Under the term "all-round success" we may group: (1) ability to acquire the art of flying; (2) physical and nervous endurance for repeated flights at high altitudes and flights of long duration; (3) flying temperament, which it is not proposed to discuss here.

Visual Efficiency.

In acquiring the art of flying the sense of vision and the power of correct neuro-muscular coördination of the limb muscles are of the greatest importance. In respect of vision the point on which it is desired to lay the greatest emphasis is the fact that binocular or better "bifoveal" vision, the term suggested by Sir Arthur Keith, is of the greatest importance. Such vision cannot be obtained unless there exists good balance of the eye muscles. Although this balance may in a large number of cases be destroyed by occupations which call largely for the use of one eye—e.g., close instrument work—microscope, sextant, slide-rule, &c.—it is even more important to recognise that in certain candidates there exists a lack of eye muscle balance which has no such cause, but is in reality an expression of unstable nervous control of the eye muscles. This instability is of great importance, particularly when associated, as it very frequently is, with other signs of subconscious nervous instability, since the subject is unlikely to fly successfully. He will be prone to erratic landings and is likely to break when exposed to hard work. The above conclusions are based on the excellent work of Wing-Commander Cecil Clements, of the Royal Air Force Medical Service, who, in suitable cases, has been successful in correcting this defect by special ocular muscle exercises, thereby converting erratic landers into successful ones.

Muscle Sense.

As experience in flying grows, the pilot, in addition to employing the sense of vision, relies also for the formation of judgments upon the "feel" of the control column, rudder bar, and seat. These sensations have their origin in impulses from the muscles, joints, and tendons. Not only do such sensations aid the pilot in forming an idea of his position to the machine and the nature of the evolution which it is executing, but upon these nervous impulses arising from the muscles, joints, and tendons depends the harmonious and smooth functioning of the muscular groups by means of which the pilot exercises control of his machine. The importance of these proprioceptive stimuli in relation to flying has not altogether been fully appreciated. Next to vision, therefore, these sensations are of the greatest importance to the flier. Such was adduced by the careful questioning of pilots, in respect of the sensations by which they fly, but the work of Garten has demonstrated the fact experimentally. Garten found by the use of a tilting chair that when blindfolded and at rest (in contrast to the rapid movements of an aeroplane), the main source of information as to our position in space was due to deep muscle sensation. All people are not endued with the same sensitivity of perception, but deaf-mutes were equally as expert as normal individuals. When the weight of the body was removed by immersion up to the chin in water, the sensitivity of perception was greatly decreased. Strong cooling of the skin of the heels and soles of the feet, and in one case injection of novocaine, caused no falling off of accuracy of perception of tilt in the tilting chair.

These experiments indicate that the so-called otolithic functions of the semicircular canals exert but little effect in affording information as to our position in space, although it is not denied that their integrity, whatever be their exact function, is of importance for aerial work, probably for the exertion of steady subconscious neuro-muscular control.

Tests for Muscular Coördination.

To judge whether a man has sufficient coördinative skill of the limbs for flying, actual flying is undoubtedly the real test; but this is expensive, involving much waste of instructors' time as well as damage to machines. In this respect, however, a certain amount of guidance can be offered by the medical side, but it must be made clear that the mere testing of psychomotor responses is not in itself sufficient. Although such tests have value—that is, a steady stable response is good and an erratic unstable response is bad—too much attention cannot be paid to the results, since the manipulative effort—raising or depressing one finger—bears no relationship to the manipulations of flying, and since, also, the coördination of eye, hand and leg, which plays so important a part in the control of the aeroplane, is not adequately tested. In England it has been found necessary to devise an apparatus which records the time taken to perform the actual arm and leg movements made in flying—as, for example, the time taken in response to a visual stimulus to bring, by the appropriate movements of the control stick and rudder, a stationary aeroplane out of what in flight would be a "spin." In this way a test is made of the time of response to both exteroceptive and proprioceptive stimuli, and an estimate formed both of quickness of perception and delicacy of the coördinated movements of flying. The apparatus was evolved by Flight-Lieutenant G. H. Reid, D.F.C., from his original control indicator designed for the purpose of night and fog flying, which is being described elsewhere at this Conference. A report upon the use of this apparatus for testing flying aptitude has already been published in the Proceedings of the Royal Society of Medicine, vol. xvii., No. 12 (Reid and Burton).

The method of investigation is as follows:—

The subject is seated in the machine and the mechanism explained to him. A preliminary series of trial reactions is given, and, when the idea of the test is grasped, observations are made as follows:—

1. Time taken for successive hand movements from right or left to central position.
2. Time taken for leg movements on the rudder to central position from extreme right or left positions.
3. Time taken for combined movements of hand and feet simultaneously—usually from stick back and full over

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* Being a paper read to the International Congress of Aerial Navigation at Brussels on Oct. 7th.

to left side with rudder full over to the right side—a position corresponding to that obtaining in the spiral manœuvre known as a "spin." In this case the time is taken until both controls are exactly centralised.

The effects of distraction may be observed by sounding a Klaxon horn unexpectedly during a series of observations. The effect is noted, not only upon the actual time of that response, which may be increased, but particularly upon the succeeding responses. A marked increase in reaction time persisting over several responses after the noise suggests some instability of nervous control. According to the individual the time taken for the centralisation of the rudder control is from 0·5 to 2 seconds, that of the stick from 1·5 to 5 seconds, due to the greater sensitivity of the setting of the stick control in the apparatus; that of the combined manœuvre (hand and feet) from 2 to 10 seconds.

These observations bring out the following points:—

1. Comparison of the time curves of hand and feet taken separately.
2. The comparison of the curve of simultaneously combined hand and foot movement to those of each taken separately.
3. The actual speed of reactions of each type as shown by the ordinates in the graph.

With this apparatus it has been found that:—

1. The first-class pilot gives a consistent record with an average time about two to three seconds, varying according to the type of machine and number of hours flown.
2. Those found unsuitable for instruction give curves of a multi-peaked nature, showing markedly erratic responses with, generally speaking, a big average time, five to six seconds.
3. The subject suitable for training, although giving a longer average time—four to five seconds—displays consistency of performance, although markedly erratic responses of long average duration probably indicate an inaptitude for the coördinated movements of flying.

It is not suggested that this apparatus shall be used on one occasion only, as, for example, at the entrance medical examination. It should preferably be employed during instruction in flying, when periodic tests will afford indication as to the rate of progress and of likelihood of acquisition of flying skill. It seems probable also that the apparatus may prove of service as a means of training pupils to acquire on the ground those particular coördinations necessary for control of the aeroplane in the air. Possibly also the apparatus may afford indication of the particular type of machine for which a pilot is especially suitable—fastness of time combined with stability indicating, for example, an aptitude for scout machines.

Physical Endurance.

But for flying efficiency it is not enough (as was shown in the war) to be endowed with a mechanical and mental aptitude; it is necessary also to be possessed of physical endurance, particularly when flying at high altitudes. It is not proposed to consider in detail here the effects of high altitude flying, beyond pointing out the fact that in such flying all the devices which conduce to efficient respiration and circulation are brought into play. It is on this account that (in the selection and periodic examination of the pilot) particular emphasis is laid upon the stability of the nervous control of respiration and circulation as well as upon general nervous stability. Generally speaking, an adequate opinion of such stability can be formed by the employment of simple tests, but in cases of doubt special measures can be undertaken, as, for example, observations to test the effect of altitude during rebreathing or during rarefaction chamber experiments. Briefly, the signs of such stability may be synopsised as follows:—

(*a*) Steady regular sitting pulse (60–72) rising in rate on standing up by not more than 24 beats per minute and subsiding in a short time to the normal sitting-rate in the very fit, or from 6–12 per minute, or about that rate, in the averagely fit. After exercise (standing on a chair five times 15 seconds) the pulse will increase from the steady standing-rate by not more than 24 beats per minute and will return to the normal standing-rate prior to the exercise in under 30 seconds. Conversely, lack of stability of control and efficiency is denoted by (1) quick pulse (irregular or otherwise); (2) undue immediate increase in rate in standing from sitting; (3) markedly increased standing-rate; (4) undue increase after exercise; and (5) delayed rate of return to normal standing-rate.

(*b*) A systolic pressure of about 120 mm. Hg to 130 mm. Hg with a diastolic pressure of about 75 mm. Hg to 80 mm. Hg, the pulse pressure in the fit being about 40 mm. Hg, and in the averagely fit not more than 50 mm. Hg. Conversely, lack of stability of control and efficiency is characterised by: (1) unduly raised systolic pressure (after all efforts to abolish temporary nervousness have failed); (2) diastolic pressure (*a*) about 95 mm. Hg (suggestive of nervous instability or excessive consumption of alcohol), (*b*) below 70 mm. Hg (indicative of possible predisposition to fainting); and (3) pulse pressures of more than 50 mm. Hg associated with the above conditions.

(*c*) Inability to hold the breath after full inspiration and respiration for about 69 seconds. Below 45 seconds is held to indicate an instability of the respiratory centre and lack of respiratory efficiency which may or may not be associated with disease.

(*d*) Inability to maintain a relatively steady pulse-rate while supporting by blowing a column of mercury with the breath held.

The technique of this test is as follows:—

With the nose clipped, the subject is asked to empty the lungs completely, inhale fully, blow the mercury to the height of 40 mm., and maintain it there without breathing as long as possible, the pulse being counted in periods of five seconds during the performance of the test. The average time in a large number of cases is between 50 and 60 seconds. A time less than 40 seconds is very unsatisfactory. In a good subject the pulse-rate may remain practically unaffected or may rise gradually in rate from 72–96, according to the time the breath is held. The pulse may rise almost at once from 72–84 or 96, and be sustained there. A large rise in rate—e.g., from 72–132 or 144—is unsatisfactory, and is held to be indicative of abdominal venous pooling. In cases of marked physical inefficiency a characteristic response is for the pulse to jump up to a very quick rate—e.g., 132–144—during the second or third period of 5 seconds, and then to fall away in rate to normal or even below normal. Such cardio-motor instability is an adverse factor in aerial work, and is an indication for rest. The test to be recorded thus:—

First, the number of seconds during which the mercury column is sustained, then the normal sitting-rate per five seconds taken before beginning the test, and then the number of pulsations in each five-second period, the time taken to blow the mercury to 40 mm. being ignored. The normal sitting-rate should be separated by a stroke from the first figure of the pulse response during the test—e.g., 50 seconds 6/6, 6, 7, 7, 7, 8, 9, 8, 8, 8, 8.

Blood Pressure.

Observations of the blood pressure during the test confirm the fact that this test elucidates also the stability of control of the blood pressures as well as of the pulse-rate. When performed to an average degree of discomfort there is in the fit subject over a period of 50–60 seconds a rise in the arterial pressure of about 30–40 mm. Hg—e.g., 120 mm. Hg–160 mm. Hg. In the less fit the pressures with attendant pulse acceleration rise more quickly and to a greater height—e.g., 130 to 180 mm. or 190 mm. Hg—generally speaking, 50–60 mm. in about 45–50 seconds. In the unstable the rise is even more marked, and may be as great as 80–100 mm. Hg in a space of 30 seconds—e.g., 160–240 mm. Hg. It is noteworthy that the greater part of such rises in pressure takes place in the first 15 to 20 seconds. This is interpreted as affording information in respect of abdominal pooling. The abdominal effort necessary to sustain the column of mercury increases the intra-abdominal pressure. In subjects with a tendency to abdominal pooling this pressure drives the blood onwards to the right heart, causing thereby an increase of heart-rate, together with an early marked rise in arterial pressure. In subjects where this pooling is unduly great the systolic pressure becomes so increased that, following the acceleration of the heart due to an increased supply of blood to the right side of the heart, there supervenes reflexly through the action of the vagus a slowing of the heart-rate mainly owing to the stimulation of the depressor nerve endings in the aortic arch.

I think it may be safely stated that physical efficiency for flying duties is associated with stability of the centres controlling the respiration and circulation. A falling away of such stability is one of the earliest—perhaps the earliest—sign of deviation from true physical fitness. It is, therefore, a sign of the greatest possible value. It is found alike in those who are out of condition or stale; frequently also in those suffering from mild infections such as a common cold. It is particularly marked in cases of debility following disease, especially in cases of "nervous exhaustion." In many cases of psychoneurosis the stability or otherwise of the lower control centres forms a valuable guide as to the form of treatment best employed for the condition. It has been found that in many cases of psycho-neurosis due to flying stress the primary cause of failure has lain with the lower rather than with the higher centres. In such cases timely rest and exercise at an early stage is all that is required to restore full physical efficiency. Early recognition of the condition forms the essence of successful preventive treatment, since at a later stage prolonged psychotherapy may become necessary. The stability of control of the circulation may also be used as a criterion in subjects who are deemed likely (*a*) to suffer from vertigo in the air due to uneven movement in the air, especially in aerial acrobatics; (*b*) to exhibit a tendency to fainting as altitude increases; (*c*) to be unduly anxious when called upon to perform aerial acrobatics.

In this connexion the following test has been devised:—

The subject is seated in the rotating chair and the nature of the test explained to him. It is pointed out that when a machine is spinning it is relatively out of control. To regain control, it is necessary that the human subject be in a condition to perform certain movements—centralise the controls; if, however, the human subject is out of control, then such movements will not be able to be performed accurately and the machine is likely to continue spinning or to come out of its spin and to go into another in the reverse direction. He will therefore now, while sitting as in a machine, with eyes open and head in best possible position—i.e., looking inside the knee further from the direction of spin—be subjected to a relatively fast spin, 10 times in 20 seconds.

The pulse-rate is noted in five-second periods and arterial pressures are now taken. Immediately after the spin these are again observed and the effects noted. More recently, also, the effect upon the ocular muscle balance has been observed.

In a large number of control tests upon good pilots it has been found that rotation has but little effect, the pulse-rate and blood pressures being only transitorily raised. The following afford three examples of many:—

1. Subject, I. H.; aged $24^{11}/_{12}$. Flying: 1200 hours—all types. General physical condition good. Pulse: sitting, 72; standing, 78–72; exercise, 84; return to normal, 15 seconds. 40 mm. Hg test: 78 seconds = 6/6, 6, 6, 6, 6, 6, 7, 6, 6, 6, 6, 6, 6, 6, 6. On rotation chair—before: pulse, 6, 5, 6, 5; pressures: S., 124; D., 82. On rotation chair—after: pulse, 6, 7, 6, 5, 5, 5; pressures: S., 126; D., 84.

2. Subject, H. N. C. R.; aged $24^{8}/_{12}$. Flying: 1500 hours—scouts and day-bombing machines. General physical condition good. Pulse: sitting, 72; standing, 96–84; exercise, 108; return to normal, 15 seconds. 40 mm. Hg test: 65 seconds = 6/7, 8, 8, 7, 8, 8, 7, 7, 7, 7, 7, 7, 7. On rotation chair—before: pulse, 6; pressures: S., 126; D., 82. On rotation chair—after: pulse, 8, 7, 7, 7, 7, 6; pressures: S., 134; D., 86.

3. Subject, C. T. O.; aged $26^{7}/_{12}$. Flying: 1350 hours—all types. General physical condition good. Pulse: sitting, 72; standing, 84–72; exercise, 96; return to normal, 15 seconds. 40 mm. Hg test: 60 seconds = 6/5, 6, 7, 6, 7, 7, 8, 7, 7, 7, 6, 7. On rotation chair—before: pulse, 6; pressures: S., 122; D., 78. On rotation chair—after: pulse, 6, 6, 6, 6, 6, 6; pressures: S., 124; D., 80.

In contrast may be given the following cases:—

Liability to Vertigo.

1. Subject, R. F.; aged 21. Whenever in air (five times) suffered from nausea, retching, giddiness—especially on descending. On rotation chair—before: pulse, 6; pressures: S., 126; D., 88. On rotation chair—after: pulse, 9, 9, 8, 7, 7, 6; pressures: S., 158; D., 102. Nystagmus time normal.

2. Subject, K. E. S.; aged $24^{10}/_{12}$. Official report: On each occasion that I have taken this officer in the air for the purpose of dual instruction, after about 15 minutes he has collapsed through sickness. Examination 20/6/23. On rotation chair—before: pulse, varying 6–8; pressures: S., 128; D., 82. On rotation chair—after: pulse, 11, 12, 11, 12; pressures: S., 172; D., 98; pulse, 11, 12, not back below 10 in one minute; pressures: S., 170; D., 96. (Two separate observations.) Nystagmus time normal. Ocular muscle balance greatly disturbed.

3. Subject, M. G. R., candidate for piloting duties. History: Train sickness till 6 years of age—does not like swings, &c. General examination: pulse 5½; pressures: S., 134; D., 84. On rotation chair—before: pulse 5½; pressures: S., 156; D., 86. On rotation chair—after: pulse, 10, 9, 9, 7, 7, 6; pressures: S., 182; D., 110. Note marked effects of rotation in addition to anticipatory anxiety rise.

Cases Showing Liability to Fainting.

1. Subject, W. S.; aged $24^{5}/_{12}$. Found permanently unfit flying—1918. On rotation chair—before: pulse, 8; pressures: S., 148; D., 96. On rotation chair—after: pulse, 9, 9, 9, 8, 8, 8; pressures: S., 156; D., 78. Note marked fall of diastolic pressure. This case also shows anxiety, Class III., since pressures taken when not on chair were S., 128, D., 78—which shows the definite anticipatory anxiety rise of pressures.

2. Subject, H. G. History, 1918: After flying 36 hours overseas crashed after a flight of two hours at 19,000 feet—flying full speed into the ground. Has no memory of crash—has not flown since. Examination 18/7/23. On rotation chair—before: pulse, 6; pressures: S., 142; D., 78. On rotation chair—after: pulse, 5, 5, 5, 6, 6, 6; pressures: (1) S., 142; D., 58; (2) S., 140; D., 60. (Two observations.) Note marked fall of diastolic pressure.

3. Subject, M. G., ex-naval officer; candidate for aviation. History: Never liked swings—mother highly strung. Ordinary medical examination: pulse, 72; pressures: S., 134; D., 90. On rotation chair—before: pulse, 6; pressures: S., 146; D., 100. On rotation chair—after: pulse, 6/—87 (imperceptible); pressures: S., 168; D., 70; (after some delay). Candidate fainted for 20 seconds, becoming pale; muscles quite limp. After test, acknowledged that once he had to be carried out unconscious from a swinging tub in Copenhagen.

Anxiety Cases.

1. Subject, R. M. J. Has been suffering from indigestion past two to three months—states feels giddy and faint on ground and in air for last month; suffered from shell-shock during war. At ordinary examination: pulse 72 per minute; pressures: S., 118; D., 76. On rotation chair—before: pulse, 72; pressures: S., 146; D., 74. On rotation chair—after: pulse, 7, 6, 6, 6, 6, 6; pressures: S., 140; D., 76. Note anticipatory anxiety rise.

2. Subject, D. V. A. M.; aged 27. Found unfit as pilot—for nervous symptoms, &c., 1918. General medical examination = unsatisfactory nervous stability and control. Pulse: sitting, 96; standing, 120–108; exercise, 132; return to normal, 25 seconds. Pressures: S., 140; D., 86. 40 mm. Hg test: 40 seconds = 8/9, 10, 11, 10, 11, 10, 10, 10. On rotation chair—before: pulse, 10; pressures: S., 154; D., 80. On rotation chair—after: pulse, 11, 12, 11, 11, 11, 10; pressures: S., 162; D., 72. Note anticipatory anxiety rise in rate of pulse with rise of systolic pressure and fall of diastolic pressure—a result further accentuated in this case by rotation.

3. Subject, D. E. W.; aged $30^{7}/_{12}$. Examined for fitness for piloting duties—has felt uneasy while flying as passenger. "Shell-shock" during Great War. General examination unsatisfactory. Pulse: sitting, 72; standing, 108–96; exercise, 114; return to normal, 45 seconds. Pressures: S., 156; D., 102. On rotation chair—before: pulse, 6; pressures: S., 182; D., 110. On rotation chair—after: pulse, 7, 7, 7, 7, 6, 7; pressures: S., 182; D., 110. Note marked anticipatory rise of arterial pressures, unaffected by rotation.

The main results may be summarised as follows:—

(1) In fit pilots, particularly those accomplished in aerial acrobatics, rotation produces but little effect upon the pulse-rate or arterial pressures.

(2) In cases subject to vertigo, nausea, or vomiting, rotation produces a marked rise in pulse-rate and in systolic and diastolic pressures.

(3) In subjects liable to fainting, rotation produces a characteristic fall in the diastolic pressure.

(4) In highly strung subjects, liable to develop an anxiety neurosis, there is a marked anticipatory rise of pulse-rate and systolic blood pressure prior to rotation, which may or may not be further affected by rotation.

(5) In practice it is found that subjects may tend to exhibit a combination of abnormal responses, but the main criterion is the fact that the satisfactory pilot is relatively stable in his responses.

From the above results, therefore, it will be seen that this test appears to afford valuable information in respect of flying efficiency and can be profitably employed when from the history or general medical examination any doubt is entertained in respect of the likelihood of such efficiency. In regard to the effects of rotation upon ocular muscle balance, these will be dealt with at a later date, in conjunction with Wing-Commander Cecil Clements. It can, however, be stated that results thus far indicate that in subjects who are not incommoded by aerial acrobatics the ocular muscle balance is not affected, whereas in subjects who suffer from giddiness and nausea this is markedly affected. During the general medical examination note is also made of any signs of lack of stable nervous control of circulation, respiration or any other system, since it is considered that stable nervous control in respect of all the bodily processes plays a great part in conferring bodily endurance. Thus undue sweating or signs of vaso-motor disturbance—e.g., flushing—are equally as much as tachycardia signs of instability. So also in certain cases is a heightened body temperature—e.g., 99·2°–99·6° F.—the only ascertainable cause for which is apparently suppressed nervous excitement.

In respect of the alimentary system, any history of alimentary disturbance in the absence of disease must lead to careful investigation owing to the frequency of such abnormal conditions being expressions of disorders of the vegetative nervous system.

Psychic Control.

The degree of higher psychic control over the primitive emotional reactions is assessed mainly by the past history of the subject, and by his demeanour and behaviour under examination. A history of undue emotivity as a child, or of any previous nervous illness, shell-shock or breakdown, is regarded as evidence of unstable higher control with a consequent tendency to break down under the strain of flying duties. The presence of stammer, tics, restlessness under examination is considered to be indicative of such a state. Nail-biting is corroborative of the same. In the clinical examination particular attention must be directed to the state of the deep reflexes and presence or absence of tremors. With regard to the knee-jerk, a brisk response alone is not necessarily considered evidence of instability. Where, however, apart from any question of organic nerve lesion, the limb can be thrown into a state of tonicity by rapid repeated stimuli, a functional inefficiency in respect of higher control is indicated. In some cases the response to the tap of the patellar tendon is a general muscular contraction of more or less the whole body, a valuable sign of defect of the highest centre control, but no indication of the condition of the deep reflexes. Such a response is usually associated with a state of anxiety, conscious or subconscious. Tremor of the fingers is evidence of some disordered functional state, and is often an accompaniment of a general state of heightened nervous excitability. Tremors of the eyelids alone are usually indicative rather of a highly strung disposition or of the result of legitimate stress—e.g., overwork or strain of occupation; tremor of the fingers and hand rather of excessive indulgence in alcohol and tobacco.

Tests for the estimation of the power of coördination of opposing groups of muscles are of considerable value in elucidating the state of higher nervous control. In the "self-balancing test" the subject stands with heels and toes touching, the arms being held at the sides. One knee is then flexed to a right angle and the legs held apart slightly. When he has obtained his balance standing on one leg, he closes the eyes and endeavours to maintain the position steadily for 15 seconds. The degree of coördination is assessed by the amount of movement necessary to maintain balance. This test demonstrates the degree of higher control rather than the condition of muscle sense or vestibular stability. Again the subject may be required to raise to shoulder level from a table a board on which stands a small relatively unstable metal rod (of fixed dimensions) and to replace it upon the table without upsetting the rod. The test should be equally well performed with either hand. Besides bringing out any existing tremor, this test demonstrates the state of muscular coördination. Both the above tests are performed with ease in subjects possessing good higher control and a satisfactory performance of the test has been found in efficient pilots. On the other hand, poor performance has been noted in association with states of exhaustion, flying stress, insomnia, and other neuropathic and psychopathic conditions in an early stage of development. In such conditions also will be found an associated lack of nervous control of the respiration and circulation, and, as already pointed out, in many cases it is the failure of such control which predisposes to the breakdown of the higher centres.

In the assessment of efficiency for flying duties, in the case of a candidate, care has to be taken to differentiate as far as possible between states producing temporary lack of nervous stability and control and those in which such lack is of a more permanent nature.

FÆCAL ENTEROLITH OF THE SMALL INTESTINE.

BY R. J. MORRIS, C.B.E., M.D. DURH., M.R.C.P. LOND.

FÆCAL enterolith of the small intestine is rare. It is the rarest cause of intestinal obstruction, only one case occurring in a 13 years' period at the London Hospital. The diagnosis is difficult, the train of symptoms often extending over a long period, so it is worth while to record the following case in the hope that it may help towards an early diagnosis.

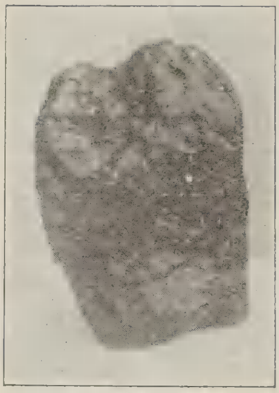
Clinical Record.

Mrs. A. B., aged 68 years, came under my care in July, 1922. She complained of painful and frequent micturition, constipation, alternating with diarrhœa, and spasmodic pains in the abdomen which brought about nausea and vomiting. She gave the following history: Dysentery and fever in India prior to 1880, followed by chronic constipation; acute enteritis in 1894; floating kidney was diagnosed in 1896; operation for fixation of kidney in 1906; and operation for gall-stones in 1907. Many gall-stones were removed, complications followed, and a further operation was performed in 1908. She had partial obstruction of the bowels in 1916, relieved by enemata and other treatment.

Examination of the patient in July, 1922, revealed some irregular bulging on left side of the abdomen, some tenderness over the site of her operation scars, no rise of temperature. Urine was normal. After a short course of treatment she left Harrogate and returned to my care on June 22nd, 1923. She stated that she had had many attacks of spasmodic pain in the abdomen, constipation alternating with diarrhœa, and that for the last three weeks the pains had increased in frequency and intensity. She complained of painful and frequent micturition; urine showed a growth of *B. coli* on culture; pulse and temperature were normal. During the following days the spasmodic pains in the abdomen increased in intensity and peristalsis was visible on inspection. On June 28th she vomited several times, on June 29th intestinal obstruction appeared to be complete. A consultation with a surgeon was arranged, when the conclusion arrived at was that the obstruction was due to malignant disease of the intestine, and operation was decided on. At the operation a hard mass was found lying free in the lower portion of the ileum and successfully removed. She made an uninterrupted recovery, and is now in good health and leading an active life.

In the moist state the enterolith was black and polished, due probably to peristaltic action, nodular on the surface, weighed 33·4 g., 5·5 cm. long, 3·8 cm. in diameter. Section showed no nucleus, texture was spongy, heterogeneous, some parts having a specific gravity greater and some less than 1.

A detailed examination by Prof. H. S. Raper, of the Department of Physiology and Biochemistry, Victoria University, Manchester, is as follows:—



The enterolith.

"The enterolith, when air-dried, was somewhat larger than a walnut and was nodular on the outside. The outer surface was black and shiny. It was much lighter in weight than enteroliths, which are rich in mineral constituents. On section it appeared to be roughly homogeneous in texture, light brown in colour, non-crystalline, and not stratified. It contained 14·0 per cent. of moisture. A portion of the powdered calculus weighing 2 g. was extracted in a Soxhlet apparatus with acetone. The acetone-soluble portion was obtained by distilling off the acetone, and this was extracted several times with light petroleum. The petroleum-soluble substance (fat and cholesterin) was obtained by distilling off the petroleum and weighed 0·146 g. = 7·3 per cent. fat and cholesterin. The portion of the acetone extract, insoluble in petroleum, was very small in amount and consisted of a brown gummy substance.

The residual substance of the enterolith after acetone extraction was now extracted continuously with hot alcohol for four hours. The alcohol extract weighed 0·12 g. and consisted of brownish resinous material from which nothing characteristic could be obtained. The main bulk of the enterolith was insoluble in organic solvents. The weight of the residue left after acetone and alcohol extraction weighed 1·47 g. and represented 73·5 per cent. of the original calculus. It gave protein reactions, a very faint starch reaction with iodine, and contained only a very small amount of ash. Under the microscope it resembled vegetable rather than animal material, and contained many dead bacteria. It was partly soluble in hot dilute sodium hydroxide and in cold concentrated sulphuric acid giving a deep-brown solution. Neither solution showed absorption bands when examined spectroscopically, and since only a minute trace of iron was present, the presence of remains of a blood-clot in the enterolith can be excluded.

To estimate the total protein present, total N was determined in a weighed portion of the acetone and alcohol extracted residue by Kjeldahl's method; 5·67 per cent. nitrogen (=34 per cent. protein) was found. From its appearance and properties it seemed likely that the rest of the extracted residue was mainly vegetable material. To test this, a small portion was treated with cold concentrated H_2SO_4 for two hours. The mixture was then diluted to make the acid 2 per cent. in strength and boiled under a reflux for six hours. The solution was filtered, neutralised exactly with baryta, and allowed to stand. The clear layer above the $BaSO_4$ was siphoned off and concentrated to 35 c.cm. under reduced pressure. The concentrated solution reduced Fehling's solution on boiling and gave a distinct orcinol reaction, indicating the presence of pentoses. It may be presumed, therefore, that the enterolith contained a considerable amount of vegetable matter.

As a result of this examination it appears that the enterolith was principally fæcal in nature, and that it did not originate as a gall-stone, a bile-acid concretion, or a blood-clot. The appearance did not suggest that it was an 'oatmeal stone' such as has been described by Hammarsten (quoted by Cammidge)."

The very careful examination sheds no light on the mode of formation of this enterolith.

Examination by X ray was omitted in this case; had a direct radiogram been taken, the enterolith would have been discovered, because examination by X rays of the section left after analysis cast a very definite shadow, almost as dense as that of bone, and would have shown up clearly in any radiogram taken of the pelvis. It would be desirable in all suspected cases to examine the abdomen and pelvis by X rays, but without the opaque meal, which would flow around the concretion and obliterate it on the radiogram.

A classification by Allbutt and Rolleston[2] includes concretions formed from amorphous fæcal matter. This appears to be the composition of this enterolith, the necessary cause of arrest being the dependent position of the lower end of the ileum, the chronic irritation of the intestine, due to enteritis, providing the colloid menstruum in which the formation took place. Tentative diagnoses of enteroliths have frequently been disproved at operation, but the possibility should be borne in mind. A positive diagnosis in this case would have prevented probably years of suffering and invalidism. A radiograph of an enterolith in situ has been described by Dr. J. Anderson, and this is the only instance I can find in the literature on this subject.

Dr. F. Cowan[16] says that rarely preoperative diagnosis is made, and that little attention has been given to the organic substances which enteroliths contain. Dr. Owen T. Williams[15] says concretions found in the intestine are not fully described, and are usually dismissed as "fæcal concretions," "fæcal accumulation," or "enterolith," often not of a simple nature but as manifestations of some abnormal condition of the intestinal secretion.

Dr. Coerr[5] mentions the fact that most of the enteroliths reported have been discovered at operation or post mortem. The rarity of such should be borne in mind and X rays employed; there are no classical signs and symptoms because of the varying size and position in the alimentary canal. Persistent constipation, digestive disturbances, nausea, vomiting, colicky pains, abdominal soreness, and sensitiveness are the usual complaints.

The concretion may act as a ball-valve causing intermittent obstruction, or becoming wedged may cause complete obstruction necessitating operation. Treves states that the most important symptoms indicative of the presence of an enterolith are persistent attacks of incomplete obstruction of the bowel. A new form of enterolith found in the jejunum in a case operated on for intestinal obstruction is described by Prof. Raper.[17] It is notable that two-thirds of the cases of enteroliths are found in the female.

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Harrogate.

HOSPITAL EXTENSION AT STOCKTON-ON-TEES.—At a public meeting on Sept. 29th, in response to an appeal for money for the extension of the local hospital, subscriptions amounting to £14,480 were announced, including £10,000 from Sir John Ropner and £1000 each from Sir Frank Brown, Sir John Harrison, and Mr. T. Mellanby. The extension will cost £43,000, of which £31,000 is in hand, consisting of gifts of £10,000 each, with interest, from the late Sir Robert Ropner, Mr. C. W. Littleby, and Mr. Leonard Ropner. This leaves £12,000 to be raised.

ISCHÆMIA CORDIS INTERMITTENS.

WITH NOTES ON THE EXAMINATION AND PROGNOSIS OF DISEASES OF THE HEART AND VESSELS.

By Dr. L. BISCHOFF,
LUGANO, SWITZERLAND.

. . . . and "in difference there is life."—
The late Sir T. Clifford Allbutt *to the author.*

In the following paper I propose to isolate and describe a group of anginoid phenomena, which I would designate as *Ischæmia cordis intermittens* and which I have closely studied. It presents the following peculiarities :—

It affects patients of about from 30 to 70 years, mostly males, who often, after more or less brisk walking (generally in the open) or climbing, or, in fact, soon after any sort of exercise, feel a disagreeable pain behind the sternum, which passes into a feeling of spasmodic contraction and oppressive sensations of anxiety, culminating in such a feeling of annihilation, that the patients are obliged to stop ; and if they must perforce move on can only do so under extreme necessity. It may, indeed, lead to complete loss of consciousness. There is no dyspnœa with this affection. A rest of a few seconds, or at most of minutes, is sufficient to enable the patient to continue his walk in perfect comfort. Soon, however, after the resumption of exercise the pain returns, and rest becomes once more necessary. The history of all patients, with slight variations, reveals the same, almost stereotyped, phenomena.

I will now proceed to mention a few such cases, describing the first a little more in detail.

Case 1.—Railway official, aged 56, sent to me for expert opinion. Nothing special in his history. Three years ago, during an easy walk in hilly country, the patient was suddenly obliged to stop because of an unexpected pain in the chest. After about five minutes' rest he was able to go on. From this time until October, 1922, when a similar sternal pain appeared, lasting somewhat longer, there had been no attack. Twelve days after, as the patient left the house for the first time after a transient abdominal affection, after 50 or 60 steps, the pain returned, obliging him to stop. After two or three minutes he could continue, but again only for 50 or 60 steps, and this recurred five or six times until the end of the walk. Since then these attacks have recurred regularly when walking in the open, but recently the distances walked without pain have become longer (100 to 150 metres). On longer walks the attacks, which in the beginning recurred at short intervals, gradually became rarer, and the distances walked, without pain, longer ; but the pain itself, when felt, is of the same intensity, always obliging the patient to stop. Shortly after food—viz., midday dinner or any other full meal—the attacks are stronger and more frequent. The same occurs when climbing stairs. Apart from these attacks the patient is well. He is a slender, rather undernourished man. Apex-beat felt in the fifth space in the mammillary line, extending down towards the median line and well visible in the epigastrium. This beat is slowly heaving. The heart borders are slightly dilated, both right and left. In the region of the manubrium sterni there is an unusual dullness towards the left. The heart sounds, which are clear and regular, are most easily audible in the epigastrium ; they are heard with difficulty at the bases of the heart. Blood pressure 180–190 max. (variable). Hæmoglobin 70 per cent. Stained blood film shows nothing of note. Traces of albumin in the urine. A screen examination showed a dilatation of the aorta, pulsating synchronously with the systole. In the first oblique diameter there was no filling of the posterior mediastinum ; dilatation of the right auricle ; slightly dilated left ventricle, which is strongly rounded. In view of the dilatation of the aorta a Wassermann test was made but gave a negative result.[1]

After four months the condition of the patient was objectively and subjectively identical. After several genuflexions the pulse was accelerated to 110 per minute ; infrequent suppression (arrhythmia) of a few pulse-waves. Blood pressure: systolic 175, diastolic 110. No pains. Observed in the open (public park), at rest, pulse 64–70 per minute, regular, equable ; blood pressure[2] (conf. Korotkoff) 170–100 ; radialis the same on both sides. After about 100 paces the patient said he felt the pain behind the sternum, radiating to the arms. Continuing the walk he asked to stop after ten paces. Facial expression somewhat anxious. No dyspnœa ; no apocamnosis. Pulse 120 to 124, of alternating form, large and small beats of the oscillometer at (Korotkoff) 190–150 ; strongly alternating murmur pulse and tone pulse with equal pressure of the cuff. Cessation of the pulse (8–10). After one minute's rest improvement of subjective condition. After two minutes the patient continued his walk without difficulty. Pulse 70, regular, equable ; blood pressure 170 (175) –100.

Case 2.—Physician, aged 62. Non-smoker, moderate consumer of alcoholics, good eater, no syphilitic history. Came on account of the above described complaints which had first appeared three years ago. The attacks came on in the open, and chiefly in cold weather. When walking is not at once stopped the pain extends to the left side of the chest, to the left and then to the right arm, and the feeling of oppression on the chest increases and vertigo appears.

State of nutrition good, hypertrophy of the heart, slight dilatation on the left, a ringing second sound of the aorta ; no murmurs. Pulse regular, well, and equally perceptible on both sides (70 per minute). Blood pressure 250–110 (Pachon) ; no albumin in urine (repeated examinations) ; no glucose, no pathological sediment. During an experimental attack the pulse was regular, 100 per minute (same right and left). Blood pressure 260–200. Heart sounds dicrotic.

Case 3.—Painter, sent for report, aged 57, complains of spasmodic painful sensation under the lower sternum and in the epigastric region, which occurs after walking in the open air and obliges him to stop. No dyspnœa. The sensation is accompanied by a peculiar feeling of tiredness in the arms. A spasmodic pain appears also during efforts of defæcation. The symptoms date from two and a half to three years back.

Patient is of plethoric complexion, high diaphragm, emphysematic thorax ; apex of heart in the mammillary line. Auscultation difficult (owing to thickness of panniculus adiposus and extension of lungs) : m.l. (median left), 12·5–13 ; m.r. (median right), 4·5 (orthodiagraphy). Oblique position of heart. Pulse regular, 80–90 ; blood pressure 190–100 (Pachon). After exercise the minimum rises disproportionately (140). Albumin in the urine ; low specific gravity (1004). Hæmoglobin 78 per cent., red corpuscles 4,200,000. Stained blood film nothing of note. Wassermann test negative. The dorsalis pedis and tibialis postica examined on the screen show nothing abnormal. The condition of blood makes chronic lead poisoning improbable.[3]

Case 4.—Female, aged 51, syphilis acquired 20 years ago in South America. For a year past, on walking quickly, she feels compression and pain in the chest. If she does not stop giddiness supervenes. One day, to avoid being run over by an automobile, the patient had to move on when giddiness had already begun ; she fainted and fell, narrowly escaping the car. She was taken home by others. No consumer of either tobacco or alcoholics.

First sound both at base and apex, resonant, with a high timbre as of church bells ; second aortic sound slightly accentuated. Percussion showed no displacement of borders. The near X ray image in the second oblique diameter (position 45) shows a sharply defined bulging and strong pulsation against the aorta "window." Slightly turning the patient to and fro facilitates topography. Pulse 84 ; blood pressure 150–100. Wassermann negative. No albumin in urine ; no glucose. Patient feels oppressed after a short walk in the open air and shows a slowly progressing bradycardia (with regular pulse), and soon giddiness ensues. The walk is not continued.

Case 5.—Civil engineer, aged 53. Family history : The father died of apoplexy. The patient is a strong smoker, partakes of alcoholics in moderation, denies syphilis. On walking in the open he complains of the above-mentioned distress. When walking is continued he loses consciousness and falls. Clonic convulsions of the limbs with foam at the mouth were observed by casual witnesses ; pulse fluttering. After about one hour the pulse is still very rapid. There was no alteration of the heart, either by percussion, auscultation, or orthodiagram. Pulse 74 per minute. In the morning with empty stomach, blood pressure 120 max. ; in the afternoon 160 max., 90 min. Wassermann negative. No albumin in urine, no glucose, no urobilinogen, nothing in sediment. Reflexes slightly increased.

Case 6.—Business man, aged 28, smoker, no syphilis. A month ago, during betrothal, the patient, after walking in the open air, gets the typical pains ; this until the breaking off of the engagement, three days ago. Nothing particular about the heart. Blood pressures 170–95, pulse 80. An experimental walk in the open air has no results. No attack to be provoked even by running.

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[1] From the report to the chief physician of the Swiss railways, Nov. 27th, 1922.

[2] Brace, manometer, and sphygmometric oscillometer were left in during the whole observation.

[3] From the report to Dr. P. in B.

CASE 7.—I regret being able to report on this case only from memory, as I examined it only as a visitor during consulting hours at the university clinic while I was assistant of Prof. Michaud. The patient was a Russian, aged about 30, rather thin. He smoked much and denied syphilis. Nothing wrong with the heart detected by percussion, auscultation, or fluoroscopy. Pulse normal (?). I witnessed an attack, for after walking about 50 metres rather briskly we were obliged to stop suddenly as the patient felt a strong pain in the manubrium sterni. He became very pale. No dyspnœa. The pulse in the radial was very perceptible. After a stoppage of a few minutes the pallor soon disappeared and the patient could provoke further fits by repeated exertion. The attacks, however, did not occur every day. The patient left for Russia before a more thorough examination could be made.

The intermittent attack after relatively hard exercise, especially in the open air, is common to all these cases. In none of them did the attack occur during rest (in bed), as may happen in true angina pectoris. Dyspnœa was never observed. In the first cases, with general or more local alteration of the vessels, I suppose there is a coronary affection in which the heart is unable to meet greater exertions, and insufficient adaptability (dilatability) of the altered vessels during exercise.

Case 2 might be included in the Bittorf's type of dyspragia cordis, dependent on the advanced age of the patients, with arterio-sclerosis of the coronaries. In Case 4 the patient shows a typical luetic affection of the aorta ascendens. In Cases 5 to 7 the cause of the attacks is probably to be found in an angiospastic neurosis (vasomotor) and an increased vasomotor irritability in the coronary vessels after exercise, something like the benign form of intermittent lameness of the lower extremities through nervous and angiopathic diathesis (Tobias), or through angiospastic diathesis (van Ordt). Perhaps with many patients there is a congenital narrowness of the vessels which Mendel especially emphasises in cases of intermittent claudication. Probably also nicotine comes in here as an exogenous factor, as it often does in intermittent claudication (Erb). I should include in this complex of symptoms some cases published by Mendel[4] of intermittent lameness of the aorta and its branches. In Case 4 the attack would be caused by poor supply of heart muscle through insufficient flow of blood in the coronary arteries (ischæmia) owing to progressively retarded sequence of heart-beats.

We know that epileptic fits (such as in Case 5) occur also in heart-block instead of (or after) the usual fainting fit. The observed tachycardia (Case 5) excludes connexion between these fits and the Stokes-Adams complex. Though observations similar to the above are rightly named "lameness" of the heart, angina pectoris and these special forms are not usually distinguished, so that angina pectoris becomes synonymous with intermittent "lameness" of the heart. Potain already called true angina pectoris intermittent lameness of the heart. Fits of insufficiency accompanied by dyspnœa do not, of course, belong to this present argument, though naturally in case of ischæmia cordis intermittens, with organically altered vessels, the neighbouring aorta ascendens may also be affected (insufficiency and stenosis of the aorta). In the same way other defects of the heart (such as mitral stenosis, &c.) may accompany it (see Gallaverdin).

We thus have to distinguish between angina pectoris vera and this form of disease. Most fits of angina pectoris occur at night or during rest; the above-described features during exercise. Angina pectoris vera has a much more unfavourable prognosis. By taking care of one's self (rest) the fits of ischæmia cordis intermittens do not occur at all—i.e., they do not come when we do not want them to. Angina pectoris vera comes when it will, and may kill in that case. In our cases, as in the usual angina, further prognosis will depend on the ætiology of the ischæmia—i.e., when there are alterations of the vessels, on the extent of such alterations, on the state of the aorta, of the heart muscle and on its reserve power. One can easily see that when there is rigidity and slow response of the vessels, and the heart muscle is then suddenly overtaxed to the point of failure, the prognosis will be a more serious one. A heart with good reserve power will resist better and longer than one without this advantage (lues).[5]

Combinations of angina pectoris with ischæmia cordis intermittens naturally occur, but still only a sharp distinction between limited complexus of symptoms can give us a clear insight into the different forms of disease; hence greater assurance regarding pathogenesis and special prognosis and therapy. The chief requirement is—besides the history which shows the way, and after a thorough clinical examination—to examine the patient during a fit in the open air, that is to walk and climb with him, always closely observing him.

I have named this complex of symptoms *ischæmia cordis intermittens*, as its origin is connected with an insufficient supply of blood to the heart muscle, whether this be due to a pure spasm, insufficient lability of the sclerotic vessels, or other factors, intermittently after exercises like an intermittent lameness of the lower limbs. The qualification, angiosclerotica, angioneurotica might still more define this affection. The statistics, of course, differ according to selection of material in relation to other diseases (intellectual and bodily workers). We know, for instance, that angina pectoris is more frequent among professional men (doctors, lawyers, clergymen, politicians, financiers) than among labourers and peasants, and hence its relative rarity in the hospitals. The fact is also to be noted that while "organic affections" of the heart predominate greatly as causes of death in the black race (½ to 2 times according to Registration Area U.S., 1914–17) angina pectoris does so (2 to 1) in the white race.

EXAMINATION AND PROGNOSIS OF DISEASES OF THE HEART AND VESSELS.

It is very advisable to carry out *auscultation* in a cabinet which shuts out exterior sounds. I much doubt whether it will be possible to register successfully the timbre by instruments. For this the human ear remains the best receiver. The rubber tubes of the stethoscope lower the character of the sounds perceived in proportion to their flexibility and their length; short tubes are, therefore, advisable. It had seemed to me in several cases that the species of the tonality, the timbre (not the intensity) before and after exercise, might inform us as to the efficiency of the heart and vessels, but I can give no definite results. I have never heard a double first sound (during quiet breathing in the entire phase) in cases of ischæmia cordis intermittens, while it has been repeatedly observed in angina pectoris (Huchard), either as "angina de décubitus, produite par le collapsus du ventricule gauche," as Vaquez calls it, or otherwise. I cannot in practice follow the division of Leclerq in classifying angina as A, B, C = cardio-sclereux, aortique, atherome cardio-aortique.

Though the assertion of Mackenzie that *respiratory arrhythmia* can indicate a sound heart cannot be sustained, still it can be accepted as a sign of good compensation. And I would add that the stronger the arrhythmia the better the prognosis (with the same patient). The following example may serve as illustration:—

Mrs. M. C. L., affection of the myocardium with angina pectoris vera, breathing arrhythmia was always present during the compensation of the heart. A few days before the fit the pulse was perfectly rhythmical and strong. During the fit there was tachycardia, but in convalescence the breathing arrhythmia was promptly re-established. Here the arrhythmia was a favourable indication, regular rhythm a bad one. (For causes see Brown-Séquard, Einbrodt, Burdon Sanderson, Hering, Fredericq, Spalitta.)

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[4] Zentralblatt f. d. ges. Neurologie u. Psychiatrie, xxvii., Nos. 2–3.

[5] In a list of 40 cases of angina pectoris, mostly Parisians, by Martinet, one half had proved luetic affection, which made the prognosis much worse.

In general, and in accordance with what I have set forth, we must suppose that when the heart responds less vigorously to the provocations which vary with the work performed (i.e., if the totality of blood thrown into the system of arteries per minute is invariable), its value as a pump is very probably impaired!

Blood pressure has been measured by the oscillatory method with Pachon's instrument. Though I prefer to use a double cuff (like Gallavardin) for measuring maxima, Pachon's simple cuff was found quite sufficient when measuring blood pressure in the open during trials. Already—as assistant—I had noticed that the blood pressures in the early mornings, with an empty stomach, were often considerably lower than when measured during the day. We know at present that a pressure that varies during the day is more favourable prognostically than a permanently even one, and I would say this is so even when the single peaks of the varying pressure curve reach much higher figures than the moderately high but flatter waves of the other. Only by comparison of pressures of different times of the day can we distinguish between the permanent and the diurnal temporary high pressures. Strictly speaking, the pressure should therefore be measured several times a day, but as this is often unadvisable, either because of an unfavourable psychic impression on the patient or for other reasons, I find two determinations sufficient, that of the early morning as the lower pressure closely approximating the pressure during sleep, and the second determination some time during the late afternoon. It is to be regretted that the observation of pressures during sleep is difficult to obtain. In the purely spastic forms of ischæmia cordis intermittens blood pressure was "variable." The patients with organic alterations showed a lowering of the systolic and at the same time a rise of the diastolic pressure, which, with a strong convergence of the two pressure-curves, gives a bad prognosis.

Radiologically (besides general fluoroscopy) I generally make use of *orthodiagraphy* and mark the pulsations and the excursions of contours. Teleradiograms were of secondary consideration. Special attention was given, firstly, to the aorta, and then to the configuration and range of contractions of the heart under different conditions; of the aorta more especially to the aorta ascendens. As to the aorta, I think that in general much unnecessary importance is given to the so-called "deepened shadow" in cases of sclerosis of aorta ascendens. Apart from the hardness of the tube, the distance of the screen, the stop, &c., which are all technical factors, the personal disposition of the observer at the time plays an important part in the judgment.

Generally, m.r. and m.l. = A.T. of the aorta were measured and its length in comparison to m.r. and m.l. of the heart, for the longer the transversal dimensions of the heart the larger may be those of the aorta without indicating a pathological state of the aorta (always considering the height of the diaphragm and the shape of the thorax, &c.). Hence, absolute single figures (dimensions of the aorta only) may be valueless.

By turning the patient slowly while standing around his vertical axis, one obtains views of the other (chiefly I. and II. oblique) diameters. This slow turning I often find of much assistance in identifying parts of the image. I only have been able to observe one patient fluoroscopically during a fit of ischæmia cordis intermittens. Such observation is rather difficult in itself. Orthodiagrams, in this case of i.c.i., before and during the fit, showed no alteration worth mentioning (f.i. dilatation), but undoubtedly the apparent pulsations and the well visible range of contractions were small. The supposition of a so-called "cramp of the heart"—i.e., of a tonic-spasmodic state of contraction—is completely excluded here. Valsalva's experiment (strong effort of expiration with closed glottis) showed scarcely any (unfavourable) change. Zehl's experiment (expiratory flattenings) did not plainly show any flattening. It is to be regretted that those two experiments are still but rarely made. Indeed, orthodiagraphy as a control is seldom made. While making orthodiagrams I have frequently endeavoured to draw the usual ventricle diastole, and vessel systole orthodiagram (during quiet breathing—as should be made in usual orthodiagraphy), the contours both of the ventricle systole and the aorta diastole. I tried to utilise the observations of varying amplitudes for *determining the functions of the heart vessels*—viz., orthodiagrams taken before and after exercise with indication of the corresponding systole-diastole amplitude. I was very pleased to see that Dietlen supports me in general on this test as a means of forming an opinion on the function of the heart. "By these means one will at least be able to decide in each case if a change in the volume of the heart-beats has occurred."

A complete cinematographic view would, of course, give a still better insight into this matter, but so far this has not successfully been done. Groedel's method, which consists in a combination of a series of radiograms with the corresponding electrocardiograms, might, perhaps, prove useful. But a continuous "film" would give us a far more objective and comprehensible view, with all details and hence with many differentiations (according to each single case). A slowed-down reproduction, such as commonly done in picture theatres for showing gymnastics, diving, &c., would permit an even closer study of details.

The strength and quality of the pulsations at the beginning of lues at the aorta as shown on such a film and compared with the latter observation, would reveal the cicatrisation, if any, which may have been produced by specific treatment (in the form of a reduced pulsation?).

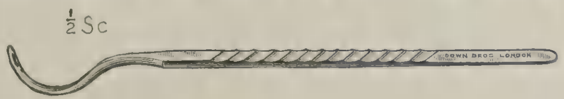
I believe I am the first who has clinically examined in the open air cases of ischæmia cordis intermittens during purposely provoked fits,[6] and I trust I have indicated several new methods and directions for work to be followed in the diagnosis of heart affections, and especially also in their prognosis, which may prove of interest.

The late Sir T. Clifford Allbutt very kindly assisted in translating the technical words into English (1923/24).

New Inventions.

A CONVENIENT DISSECTOR.

IN the operation of transfusion of blood it is desirable that the veins, whether of donor or recipient, should be handled as delicately as possible, and finding that most of the instruments for this purpose were unduly heavy, I have had constructed a combined dissector and aneurysm needle (see figure.). The instrument is made of rustless steel, and is very light. The aneurysm needle is flattened and takes up very little room in the wound. The shaft is serrated and is flattened at its end to an edge which is almost sharp. It is conveniently employed in conjunction with a pair of cilia forceps with very light springs, the points of which are toothed. Both instruments are also useful for fine dissections on experimental animals.



Messrs. Down Bros., Ltd., are the manufacturers.

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[6] Schweiz. medizin. Wochenschrift,. vol. liii.

Medical Societies.

ROYAL SOCIETY OF MEDICINE.

SECTION OF OBSTETRICS AND GYNÆCOLOGY.

THIS Section held its first meeting of the session on Oct. 1st, Mr. T. G. STEVENS, the President, occupying the chair.

Per-uterine Insufflation of Fallopian Tubes for Sterility.

Dr. I. C. RUBIN (New York) read a paper, enriched by numerous epidiascopic illustrations, entitled Diagnostic Value and Therapeutic Application of Per-uterine Insufflation of the Fallopian Tubes in Cases of Sterility. He said the method was devised to determine the patency of the Fallopian tubes, and that before its introduction it was necessary to do exploratory laparotomy in the kind of cases under review. In 1914 he commenced his attempts with collargol, but the results he did not regard as favourable, as patients complained of distension and epigastric distress, and when standing up there was pain in the shoulders and diaphragmatic region. Carbon dioxide was substituted for oxygen, as the former was more rapidly absorbed from the peritoneal cavity. With regard to spasm of the tubes, he soon realised that there were cases in which the first test by insufflation seemed to indicate that the tubes were non-patent, but on a second or a third trial gas was forced through the tubes into the peritoneal cavity, and a fourth repetition showed that the gas could be forced through at a relatively low pressure. In the early cases he was content with ascertaining whether, in a given woman, the Fallopian tubes were open, but it was now possible to ascertain by the method whether one or both tubes were open, and it was not necessary to inject opaque solutions. In cases of normal patency the pressure rose to 40, 60, 80 mm. of mercury, then dropped, then fluctuated for a time, and the patient did not complain of pain. If the pressure rose to 140 or 160 mm. and then dropped, it showed there was a distinct stenosis or obstruction which was remediable.

Contra-indications and Dangers.—The presence of purulent discharges from the cervix, vagina, and urethra constituted a contra-indication to insufflation, as did also the presence of tumour masses in the pelvis, and particularly if tense. Even if there were only tenderness in the pelvis on bi-manual examination, without a palpable tumour, he would not adopt the insufflation method. Those who prescribed the method originally and those who had followed the procedure carefully did not have any trouble from it at all. The cases of trouble were those in which the practitioner attempted it without having fully studied it, and had applied it at an unfavourable part of the menstrual cycle. It should never be practised during the menstrual flow, nor on women who suffered from serious cardio-renal disease. If cases were properly selected, danger from embolism could be practically discounted. The injection should be carried out slowly and carefully. He had not had any peritoneal reaction in 1600 cases. The safest time to insufflate he had found to be four or five days after the cessation of the last regular period. The worst time for it was just prior to a period falling due. A month should elapse before repetition.

Results.—Dr. Rubin said that since he adopted the method he had been seeing among his patients an increasing number of pregnancies. He had studied the effect on the menstrual period and noted that in quite a number there had followed a relief of dysmenorrhœa. In 1000 consecutive cases in his practice there had been 10 per cent. of pregnancies, and these were not ascertained from inquiry instituted, but were voluntarily reported by the women themselves. As a result of a questionnaire sent out there were reported 52 pregnancies out of 763 patients who were treated by the method for sterility. Most of the cases were of women who had been married four or more years, and when 10, 15, or more years of childless married life had been experienced, and then coitus following the insufflation resulted in pregnancy, he thought the claim of cause and effect was a just one.

In describing the mechanism of the procedure, by the aid of slides, Dr. Rubin pointed out the importance of the tube reaching well up beyond the internal os. In some cases a mucus plug, not visible at the external os, as it occupied the deeper portion of the cervical canal, was seen to be expelled after insufflation and when the cannula had been withdrawn. Such removal must, he contended, be a factor in some of the successful cases; and the same applied to the straightening out of tortuous tubes. He believed that in some patients the insufflation had a psychic effect on the patient, curing a spasm which had sufficed to close the uterine ostium.

Discussion.

In the brief discussion, Dr. S. FORSDIKE said he had been using the bulb method for 15 months, and thought the critics of that method had exaggerated the danger of escape of air. His use of the bulb method followed on some researches he conducted on cats with lipiodol, careful examination of the tubes of these cats showing that the use of the method on the human being was fully justified.

Mr. A. W. BOURNE, having used the method, said it would be a great advantage if X rays could be dispensed with as a means of ascertaining whether the gas had passed through the tubes, reliance being placed on hearing with the stethoscope applied to the hypogastrium the noise of the passage of the gas. He questioned whether the rubber acorn on the cannula sufficed, in the case of ulcerated and otherwise irregular cervical surfaces, to prevent leakage.

Dr. T. WATTS EDEN referred to two cases in which he tried the method. In one the patient had had one or two miscarriages and had a retroverted uterus which, he thought, was adherent. She was anxious to have a child, and he thought it would be a good chance to use the method, having the patient under anæsthesia in case an operation was required. There was a rapid rise to 300 mm., which was sustained, and no gas went through. He found the uterus was retroverted and lightly adherent to the pouch of Douglas. There were no tubal adhesions, and he could pass a probe up to the uterus on either side. The second patient had never been pregnant, but wished for a baby. Her uterus was large and hard, but movable, and there was no evidence of pelvic inflammation. According to the instrument there was a block in both tubes, but he found that she only had a small interstitial fibroid in the fundus of the uterus, both tubes being healthy.

Mr. VICTOR BONNEY said his view was that if a woman wanted seriously to have a child the aim should be to remove any structural defect which could be found, and that was one reason why he had not done tubal inflation except under an anæsthetic. If he found a tube was blocked, his practice was to open the abdomen at once. Sterility was commonly associated with retroflexion, and in many cases there was a blockage of the tubes. In some cases V-shaped kinks were found, and these could not in some cases be straightened out as a fine band united the two limbs of the V, and this had first to be divided.

Exhibition of Specimens: Endometrioma.

Mr. BECKWITH WHITEHOUSE (Birmingham) showed an endometrioma which had invaded the bladder of a single girl, aged 22, who had never menstruated. He said there was an element of doubt as to the ætiology of this class of tumour—i.e., as to whether endometriomata were due to regression of the menstrual discharge in the Fallopian tube, or whether they were grafts of endometrium upon the organ or peritoneum upon which they rested. This girl complained of intense pain in the pelvic region, particularly on the right side, at regular four-weekly periods, so severe as to compel a temporary cessation of work. She had never experienced menstruation in the ordinary sense. Examination showed she was virgo intacta, that the uterus was irregular in shape, and the appendix somewhat matted. At operation the uterine appendages were found to be surrounded by adhesions; the tumour was on the anterior wall of the uterus. On opening the tumour there was an escape of the typical tarry material seen in a blood-cyst of the ovary. He therefore opened the bladder, took away a portion of vesical mucous membrane, sutured the bladder, and performed total hysterectomy. The specimen showed a cystic lined cavity, containing this tarry material. The patient made a normal recovery and she was now well and free from pain.

Mr. Whitehouse also showed an intra-ligamentary endometrioma from a married woman aged 33. The patient had been married five years, and in the year previous to attending hospital had had three abortions. At the second abortion she had a retained polypus, and was curetted by the exhibitor, who thought he detected an intra-ligamentary fibroid on the right side. After the third abortion the patient consented to the removal of this fibroid. He found a tumour between the layers of the right broad ligament, and carried out subtotal hysterectomy. On opening the tumour after removal tarry material, as in the last case, exuded. He did not favour the view that these tumours were implantations of endometrium.

Malignant Endometrioma with Lung Metastases.

Dr. A. P. **THOMSON** and Dr. F. W. M. **LAMB** showed a specimen of this description. The former said he was unable to trace a record of anything similar before. He saw the patient, a school teacher aged 27, in 1923, whose menstruation was normal and remained so until the end of her life. In 1923 she started a course of physical training to fit her for a post as games mistress, and after a particular swing race she became very blue and breathless. She returned home under the impression that her heart had been strained. She did her work with increasing difficulty, and in March, 1924, she was sent to Dr. Thomson. She said she had progressively lost weight, the total loss to date being 9 lb.; she also had great lassitude and became short of breath on exertion. There was but slight impairment of the percussion note over the right clavicle, and he heard some fine crepitant râles. There seemed a possibility that she had tuberculosis, and X rays showed a shadowing over the right upper lobe. He therefore sent the patient to Switzerland. When walking there with a medical friend the latter noticed that the patient's face appeared almost black against the snow. She was sent home, and Dr. Morley Fletcher, who saw her, found she had polycythæmia, the blood showing over 6 million reds. Following on repeated distress, Dr. Thomson saw her again in November last, and then the outstanding feature was an intense purplish-black cyanosis. While seated quietly in front of the fire the appearance of the face became almost normal, but the hands were very blue. In the chest there were now only a few fine crepitant râles at the apex of the left lower lobe. She then appeared to have gone to another physician, who told her to take more exercise, and, as a result of attempting to fulfil this instruction, she almost died in the street. A colleague was called and found her sitting in a chair much distressed, and there were crepitations over both lungs. A fortnight later she was seen by Dr. Stanley Barnes, and was still very cyanosed. Shortly afterwards she rallied and entered the hospital under Dr. Barnes. The red cells had then mounted to 12 million, and shortly after the number soared to 13½ million. The dullness on the left side was found afterwards to be due to a left pleural effusion, the fluid being chylous. She continued more or less in this state for six weeks, much oxygen being used to combat the cyanosis, and the red cell count dropped to 6½ million. But she had ascites due to the chylous fluid, and died soon after this started. No satisfactory cause for the illness was ever found. Post mortem a chylous effusion was found on the left side with complete collapse of the left lung. The heart and great vessels were normal. The right lung showed a curious emphysema, and in the abdomen, along the course of the aorta, there were enlarged glands. Apparently the chylous effusion in the abdomen and thorax resulted from direct pressure on the thoracic duct.

Dr. Lamb demonstrated the section of the growth in the recto-genital space, showing that it contained aberrant muscular tissue. No connexion could be found between the tumour and the other part of the pelvic organs. He preferred, for this tumour, the term adenomyoma, as its essential constituent was muscle. The lungs did not show a nodular metastasis, but were very friable, and looked like soft red rubber. A professor in Birmingham suggested that there might be some obstruction to aeration of the blood which did not, however, obstruct the vessels, and that seemed to be the case.

Reviews and Notices of Books.

THE NORMAL MIND.

An Introduction to Mental Hygiene and the Hygiene of School Instruction. By WILLIAM H. BURNHAM, Ph.D., Professor of Pedagogy and School Hygiene in Clark University; Member of the Joint Committee on Health Problems of the National Education Association and the American Medical Association. London and New York: D. Appleton and Co. Pp. 702. 16s.

WRITERS on the subject of mental hygiene and societies directed towards its promotion have been prone in the past to devote most of their attention to the subnormal and the abnormal. In this book, which is designed as an attempt to apply scientific knowledge towards the guidance of the development of mind, and particularly the mind of the school child, Dr. Burnham deliberately concentrates upon the normal, and only incidentally for purposes of illustration deals with departures from the normal, whether failures in development or temperamental inequalities of development. He starts with the fundamental proposition that the essential characteristic of the normal mind is integration of the personality, which implies adjustment to the environment. On the intellectual side of the mind he finds this integration expressing itself in the capacity for concentrated attention, the habit of orderly association; and on the temperamental side in the control of disordered instincts, the solving of mental conflicts, and the removal of harmful repressions. The means by which to attain integration is that of coördinated activity, physical and mental, in the doing of significant tasks. He promulgates three essential conditions of integration and therefore of mental health—the task, which may be anything from the immediate goal of the moment to the more remote ideals of life; the plan, which makes the work purposive; and freedom. These points are discussed with a wealth of detail. He devotes considerable space to the discussion of conditioned reflexes, not merely, however, from a theoretical point of view, but keeping always in view their practical significance in the formation of associations and habits.

Dr. Burnham lays much stress upon the necessity of discovering the superior mentalities and the special directions in which they are superior in order to constitute an ideal social group in which these superior abilities can be integrated for a common purpose. The chief application of intelligence tests in the broadest sense will, he considers, lie in the discovery of the superior individual and his superior talent. Two specially valuable chapters are that on the acquirement in school of right mental attitudes, suitable interests, and proper habits of study and thought, and that on suggestion. Freud's contributions to psychology are sanely applied, and placed in proper perspective. The book, while designed for educationists, is of value to anyone who desires to learn to think clearly and avoid the cultivation of bad mental habits. The medical man who is necessarily nowadays a psychologist will find it eminently practical. To the school doctor it should be of special interest. If the book has a fault, it is in a tendency to prolixity.

A Clinical Handbook of Mental Diseases.

For the use of Students and Medical Practitioners in India. By W. S. JAGOE SHAW, M.D. Belf., M.B., Ch.B., B.A.O., R.U.I., Lieut.-Colonel I.M.S., Superintendent, Central Hospital for Mental Diseases, Yeravda, Poona. Calcutta: Butterworth and Co. (India), Ltd. 1925. Pp. 202 + 29. Rs.3.

THIS interesting and instructive little book is eminently suitable for its purpose. Directed to the assistance of the student and practitioner in India, who no doubt must often be called upon to face the practical problems involved in the treatment of mental disorder, it provides in a comprehensive and compact form just the information he requires to enable him to envisage his difficulties and to see roughly on what lines he may solve them. Naturally, the subject is treated somewhat superficially and contentious matters are avoided, but the author has introduced all that is of practical importance and the book is in every way quite up to date. The appendices which deal with the practical methods of securing the proper accommodation for the treatment in India of both Europeans and Indians, civil and military, and of arranging for the transfer from India to England, are very important. It is in such matters that the patient is most liable to suffer from the lack of experience of the practitioner. The low price of the book should make it accessible to all who may be brought into contact with the mental patient.

Local Anæsthesia.

Die Örtliche Betäubung. Seventh edition. By Prof. Dr. HEINRICH BRAUN. Leipzig: Johann Ambrosius Barth. 1925. Pp. 511. M.22.50.

The Technique of Local Anæsthesia. Third edition. By ARTHUR E. HERTZLER, A.M., M.D. London: Henry Kimpton. 1925. Pp. 272. 25*s.*

THE increasing interest which is taken in local anæsthesia is reflected in the two volumes before us. Both are new and enlarged editions of well-established works and they include many pages devoted to methods not even mentioned in former editions. Prof. Braun deals with the subject with the thoroughness familiar to students of his earlier editions and characteristic of the German mind. Commencing with the great aphorism of Hippocrates "Divinum est opus sedare dolorem" he traces the history of local anæsthesia from the earliest times down to the present day. From the use of compression by Patroklus at the siege of Troy he tells the story of the use of cold by Larréy in the Russian campaigns down to the superb injection methods of modern anæsthesia. It is strange that cocaine, discovered by Pizarro in 1572, should only in 1884 have been used by Kollers for the anæsthesia of the eye. In spite of its dangers cocaine remains pre-eminent as the most powerful anæsthetic we know, but Prof. Braun gives an exhaustive account of the many substitutes which chemical research has placed in our hands, and of which novocaine, until quite recently, has been the most successful.

The surgical methods of anæsthesia are described by Prof. Braun with great elaboration and with a completeness of technical detail which will appeal to all who practise their use. The instruments required are exactly described and beautifully illustrated, and on every page will be found hints invaluable to the practical surgeon. The application of local anæsthesia to the various regions of the body are fully described and superbly illustrated, and include a full discussion of such up-to-date methods as sacral and splanchnic anæsthesia. The volume is replete with original ideas, and the method of anæsthetising the palm from the back of the hand is a surgical manœuvre so neat as to repay the cost of the book. From the illustrations a surgeon, even without a knowledge of German, may learn a vast amount about technique. The book concludes with a list of 2000 references, obviously selected with great care. To the student of German psychology two small points will be of interest. From the text no fewer than 4000 foreign words have been expurgated and the title of the book has been changed from "Lokal-Anästhesie."

Dr. Hertzler's volume makes no pretension to encyclopædic compass, but succeeds in giving a sufficiently full account of the methods of the art. The book is well printed and illustrated, and those who wish for practical information without great elaboration will find it ample for their purpose. There can be no question that local anæsthesia has a great future before it, and surgeons will be grateful to the authors of these two volumes for their assistance in one of the most beautiful of the surgical arts.

Anatomy.

Buchanan's Manual of Anatomy, including Embryology. Fifth edition. Edited by E. BARCLAY-SMITH, M.D., King's College, London; J. E. FRAZER, F.R.C.S., St. Mary's Hospital; F. G. PARSONS, F.R.C.S., St. Thomas's Hospital; and W. WRIGHT, F.R.C.S., London Hospital. London: Baillière, Tindall and Cox. 1925. With 810 illustrations, mostly original and in colours. Pp. 1702. 35*s.*

THE last edition of this popular manual, which appeared six years ago, was produced under the editorship of a committee of anatomists in London, but as it was largely in the nature of a reprint their efforts were subject to considerable restrictions. In the present instance they have had a freer hand, and have revised and in some cases extensively rewritten the text, while adhering in the main to the general arrangement. This is particularly noticeable in the sections dealing with the limbs. Many new and good illustrations have been added. As hitherto, the book deals with anatomy from the regional standpoint, and for this reason is eminently suitable for general reading. The old terminology is adhered to. An excellent index facilitates use as a book of reference.

As regards embryology, the work includes what is practically a new manual on the subject. There is a chapter on general embryology at the beginning of the book, and the more detailed development of the various organs is described under the several headings. The descriptions are sufficiently long to fulfil their purpose and sufficiently short to invite reading, and we feel sure that the student will welcome this section, requiring as he does authoritative, concise, and up-to-date information on this, to him, nebulous branch of anatomy. The practical guide to dissection omitted from the present volume is to be published independently.

We can confidently recommend the new "Buchanan."

Case-taking.

Notes on Medical Case-taking and the Examination of Patients. By G. S. HAYNES, M.D., M.R.C.P., Assistant Physician, Addenbrooke's Hospital. Cambridge: W. Heffer and Sons, Ltd. 1925. Pp. 57. 3*s.*

THIS is a handbook for the use of students in their examination of clinical cases, of a size easily carried in the pocket, interleaved with blank pages for notes. The main systems are set out in reasonable detail, without cumbersome minutiæ, the circulatory system having more space devoted to it than the alimentary, respiratory, and nervous. Curiously enough, the hæmopoietic system has been omitted altogether, while under the nervous system there is no mention of the examination of the pupils. The author has noted the significance of important signs in order to make the manual more lucid to the student. A typical case record is included.

Handbooks of this type are of assistance to the student in forming habits of systematic observation of cases, and this is a good example of the type.

PRACTICAL OPHTHALMOLOGY.

Causeries d'Ophtalmologie Pratique. By Dr. A. CANTONNET, Ophthalmologist to the Paris Hospitals. Paris: A. Maloine et Fils. Pp. 325. Fr.16.

THIS little book, a welcome variety from more formal text-books, contains much useful information, and is sufficiently stamped with the individuality of the author to make it interesting to the advanced student. It is before all things practical, and begins characteristically with a description of how best to examine the eyes of a photophobic child. It is by no means limited to the elements of the subject, however, and we very soon come to a section on examination with the red-free light and another on testing the sight of the aviator. Details of refraction and operative treatment are not dealt with, but the chapters on symptoms and diagnosis contain matter of interest to every surgeon. It is pointed out, for example, that in recent cases of syphilis with headache there may be hypertension of the cerebro-spinal fluid from subacute or chronic serous meningitis, and this may be the cause of choked disc. Another possible cause not generally recognised is traumatism of the skull. In any case of choked disc temporary obscuration of vision should be regarded as a danger-signal calling for serious consideration of an operation for decompression. In some cases of ophthalmia neonatorum no gonococci can be discovered, and it is probable that these cases are caused not by microbes at all but by non-microbic structures which have been found in the conjunctival epithelium of the infant, as well as in the vagina of the mother and the urethra of the father. One cause of those cases of muscular paralysis often ascribed to cold is arterio-sclerosis.

These are samples of the subjects of these lectures, and although the opinions of the author are not invariably orthodox, they are always worthy of consideration. The author has an original mind. In connexion with binocular vision he invented the well-known experiment of the "hole in the hand." In this book there are diagrams which we do not remember to have seen elsewhere, showing the different effects of salt solutions of different concentrations on the cornea. Even in such a subject as the non-operative treatment of glaucoma, a method of administering pilocarpine drops is described which seems well worthy of trial.

EXPERIMENTS IN GENETICS.

By C. C. HURST. Cambridge University Press. 1925. With 175 figures. Pp. 578. 50*s*.

THIS handsome quarto contains the record of 30 years of active work in breeding animals and plants. It consists of reprints of 38 papers and addresses. The first, published in 1897, deals with the curious generic hybrids which can be made in orchids; the last (1925) is an analysis of the chromosome constitution of the species of Rosa throughout the northern hemisphere which ends with a promise of a great deal more on the same subject. The wide field which Dr. Hurst has covered at Burbage in Leicestershire includes also the coat colour of rabbits, fowls and their fecundity, horse-breeding, snapdragons, human eye colour, and other subsidiary subjects of genetical inquiry. The whole forms a record of which anyone might be proud, and it covers a moving period in the history of inheritance, because the early observations were made in pre-mendelian days and the latest in the light of the most modern cytological refinements. It constitutes in this way a sort of running commentary on the progress of the science of genetics, and it is for the most part easily intelligible to those who are not very familiar with the advanced nomenclature of mendelism. We could have wished for one improvement—that the author had made rather more ample commentary on his earlier results in the light of what has transpired since. His notes are few and brief.

TREATMENT.

A Text-book of Practical Therapeutics. Nineteenth edition. By HOBART AMORY HARE, M.D., Professor of Therapeutics, Materia Medica, and Diagnosis in the Jefferson Medical College of Philadelphia. London: Henry Kimpton. 1925. Pp. 1061. 36*s*.

A NEW edition of this book follows quickly on the last; a successful book in medicine and its branches has to come out often, for medicine is changing rapidly. The use of insulin, the internal application of iodine in exophthalmic goitre, the development of the Schick test, variation in drugs used in syphilis, all mark steps of advance. As in previous editions this book, which is really an index of treatment, consists of four parts, all alphabetically arranged—namely, general considerations, drugs, remedial measures other than drugs, diseases. Information may thus be reached from different sides either under the disease or under the remedy; cross references and indexes are full and good, so that everything is easily found. The reader will like the book better the more closely he studies it; it is full of information and eminently readable.

Ghosh's Treatise on Materia Medica and Therapeutics. Tenth edition. By BIRENDRA NATH GHOSH, Examiner in Pharmacology, University of Calcutta. Calcutta: Hilton and Co. 1925. Pp. 718. 10*s*. 6*d*.

THIS edition of Rakhaldas Ghosh's book has been undertaken by B. N. Ghosh alone, as Major-General B. H. Deare has retired. It has now passed through five hands in its ten editions. The present edition does not differ much from the ninth in general form, but several drugs on which recent work has been done have been written up afresh. Some of these, as antimony in leishmaniasis and carbon tetrachloride, are of especial interest to the Indian student. The book is a good, if somewhat heavy, summary of pharmacology and therapeutics culled from the best sources. The editor acknowledges that he has availed himself of the work of Cushny, Clark, Dixon, and Sollmann, than whom there are no better exponents of pharmacology.

TEXT-BOOK OF MEAT HYGIENE.

By RICHARD EDELMANN, Ph.D., Professor at the Royal Veterinary High School, Dresden. Fifth revised edition by JOHN R. MOHLER, A.M., V.M.D., Chief, United States Bureau of Animal Industry; and ADOLPH EICHHORN, D.V.S., Director, Veterinary Department, Lederle Antitoxin Laboratories. With 161 illustrations and 5 coloured plates. London: J. and A. Churchill. 1925. Pp. 478. 25*s*.

THIS text-book has now passed through five editions and would seem, therefore, to be established as a standard work upon the subject. The book may be considered from two points of view—i.e., as a source of scientific information upon animal diseases, and as a practical guide to meat inspection. Its chief value lies in the information given on the anatomy and physiology of the normal animal and on the most important diseases which may affect animals used for human food. There is a detailed account of the distribution of the lymph glands in animals, the peculiarities of meat from different animals is discussed, and the various bacterial diseases and animal parasites are described in detail. The bacteriological examination of meat as a help to diagnosis is too briefly touched upon to give substantial help. The account of putrefactive change on its bacteriological and chemical side is inadequate, and Eber's ammonia test for putrefaction is still described and illustrated, although it is generally recognised as useless, whilst more modern tests are not even mentioned. Chapter XI., which deals with meat poisonings, is the kind of article which was written on the subject a dozen or a score of years ago. It ignores most of the modern work on the subject, and no one reading it would obtain an accurate account of our present knowledge of meat and food poisoning. It is true ptomaines are not brought forward in this connexion, but decomposition changes and poisoning from *B. coli*, proteus species, &c., are mentioned as important causes of meat poisoning. The section on botulism still gives sausages as the most important causes, while all the recent American work on this bacillus and its relationship to canned foods and to animal diseases is ignored. The account of van Ermengem is accepted as the latest and final information upon the subject.

From the administrative point of view the book is of little service to English meat inspectors. Chapter IV. gives an extended account of the regulations governing the meat inspection of the United States Department of Agriculture which is of interest but is not applicable to English conditions. The judgment sections all deal with American practice. The chapter on abattoirs deals solely with Continental and American conditions and is not of much help as regards the slaughter-houses which prevail in this country. A handbook which at the same time provides a scientific and up-to-date account of the physiological appearances and pathological conditions which occur in animals used for food, which is a reliable guide to their detection and also gives simple accurate information as to the judgment which should be exercised in their condemnation or passing for human food is much needed. While Dr. Edelmann's book contains a vast amount of valuable information it cannot be advocated as a satisfactory practical text-book for the meat inspector in this country.

Constitutional Disposition.

Die Konstitutionelle Disposition zu Innere Krankheiten. Third edition. By Dr. Julius Bauer. Berlin: Julius Springer. Pp. 794. $9.60.

A book of 800 large octavo pages, published in so unfavourable a year as 1917, which has reached a third edition, must obviously be meeting a demand, and undoubtedly such a work as this of Dr. Julius Bauer needed to be written. Of recent years the attention of medical workers has been mainly directed to the agents which, entering the body from without, give rise to disease, and to the mechanisms by which the tissues protect themselves with greater or less success; whereas the inherent qualities of his tissues, which render an individual more or less liable than his fellows to this or that malady, have received much less attention. Diathesis which figured so largely in the medicine of our grandfathers is a word seldom heard nowadays, and we are in danger of forgetting that not all of pathology can be studied in the laboratory.

It is time that we should turn our thoughts back again to the study of constitutional tendencies and of the outward signs by which, in some instances, special liabilities may be recognised. Such a study needs to be based upon the knowledge now available of heredity, idiosyncrasy, protein, sensitivity, balance of hormones, and individual and specific chemical peculiarities. It has been the self-imposed task, and certainly no light one, of Dr. Bauer to bring together such information upon these subjects as bears upon disposition to diseases of various kinds. Whilst he admits the truth, at the time when it was pronounced, of the dictum of Germain Say, "La disposition est un mot pour masquer notre ignorance," he holds that the time has come when it is possible to define the share of constitutional tendencies in the pathogenesis of individual maladies.

The amount of information collected between the covers of this book is immense, and he who seeks to obtain knowledge of any special deviation from the standard of which we speak as the "normal" will seldom be disappointed, whether such deviation be one often met with or one which is extremely rare. The earlier chapters, which occupy rather more than 100 pages, treat of the subject of constitutional predisposition in its general aspects. The views of various writers, and the nomenclatures which they adopt, are described and discussed. Signs of degeneracy, structural and functional abnormalities, and such anomalies as persistent infantilism and premature senility, are considered. In a full and interesting chapter the liability of some individuals to, or natural immunity from, particular infective diseases receive due attention. The later chapters deal with the several systems and organs in turn; with the anomalies met with of their form and position, individual variations of their functional capacities, and the bearing of all these factors upon the liability of the patient to be attacked by various maladies, and of particular organs to bear the brunt of the attack.

Obviously the whole subject is very complex, and there is little in common between such factors as shape of thorax and lungs as a predisposing cause of pulmonary tuberculosis and a sensitivity to certain proteins which predisposes to asthma. Thus, under the heading "kidney," to take a single example, we find sections which treat of malpositions and malformations of those organs, of obstruction of urine due to structural anomalies, and of congenital cystic kidney. Amongst functional anomalies are included the so-called renal glycosuria and the several varieties of functional albuminuria. Special liabilities, usually hereditary, to nephritis and granular kidney also receive consideration, as also do ischuria and polyuria, the tendency to form calculi, and liability to urinary disorders of nervous origin. Clearly when treating a theme so vast individual items must often receive but brief consideration; for the benefit of those who desire to look further into particular items an ample bibliography is provided, which covers no less than 140 pages; and there is an adequate index.

Incompatibilities in Prescriptions

Fifth edition. By Edsell A. Ruddiman, Ph.M., M.D. London: Chapman and Hall, Ltd.; New York: John Wiley and Sons. 1925. Pp. 330. 12*s.* 6*d.*

The first hundred pages of this book present the common incompatibilities in concise form, the substances treated being arranged in the alphabetical order of their Latin names. This section should be of real value to the busy prescriber. The next section (of about 50 pages) is intended more for the student of pharmacy; it contains a list of 480 prescriptions as an exercise, so that he may study them and find out for himself where the fault is to be found in each one, and the best means of avoiding it. Then follows another long section containing clear and detailed criticism of these prescriptions by means of which the student may check such conclusions as he may have been able to draw. The last section contains a useful table showing the effect of rubbing together equal weights of two solids, and a series of tables showing the solubilities of all the commoner drugs in water, alcohol, ether, chloroform, and glycerine, together with a column showing the solubility of some of the drugs in miscellaneous solvents. A serious blemish in this table of solubilities is the absence of any explicit statement as to the meaning of the figures, the reader being left to deduce the fact that they refer to parts of solvent to one part of dissolved substance. No temperature is indicated; presumably that vague idea, "room temperature," is implied.

The book concludes with two good indexes: one of incompatibilities, the other of prescriptions. It is well printed, and should be a useful desk companion to prescribers and students in this country. It could, we think, be improved by the inclusion of a short introductory section dealing with the general principles of incompatibility.

Mr. Henry Kimpton is the English publisher of C. E. Turner's "Personal and Community Health," reviewed on p. 702 of our last issue. The price is 12*s.* 6*d.*

THE LANCET.

LONDON: SATURDAY, OCTOBER 10, 1925.

POST-GRADUATE EDUCATION.

IN a foreword to the first number of the *Post-Graduate Medical Journal* Sir WILLIAM HALE-WHITE compares the newly qualified doctor to a mariner setting out on a voyage over changing seas. For a time he is well served by the charts which his teachers have given him, but as he finds that the best of charts provided by others cannot meet the developments or emergencies with which he is confronted, he begins, consciously or unconsciously, to make charts for himself. And as the years pass he finds that he requires help in dealing with the new currents; truer soundings have made old observations obsolete, while fresh waters are opened which were uncharted in his pupillage. To provide opportunities for such revision is to raise the standard of medical work, and to meet this need alone justifies the establishment of post-graduate education in this country. The great mass of medical practice must be carried on by individuals largely upon their own responsibility, and it is a function very appropriately performed by the great London hospitals when they offer to their qualified men fresh inspiration in aims, methods, and ideals.

That such an offer evokes an enthusiastic response is shown by the success of the course of lectures given during last week-end at St. Mary's Hospital; an account of the proceedings will be found in another column, and similar developments in this direction at other centres are inevitable. The constituency to be assisted is ready to the hand, and on one side the material from which to draw the necessary teaching is present in superabundance. But while—if the simile is not being too much laboured—the general mariners may be expected to increase in number, and while the object-lessons are aggregated in miserable wealth in the metropolis, we are apt to forget that the pilots are in a most difficult position. Just as to get an accurate knowledge of special seas, and to train for an extra-master's certificate is not easy, except as the result of long preparation, so special teaching in medicine is not a fortuitous accomplishment. Further, many who possess the necessary qualities and gifts may not be available for their distribution; and the arrangements for the work are in London ill-organised because of the vast size of the metropolis, and, at bottom, because of the absence of a great clinical centre. The sound work of the Fellowship of Medicine can be estimated now that that body is issuing regularly a journal, which will be published monthly under the editorship of Dr. ADOLPHE ABRAHAMS. For many years the Fellowship has done its best to remedy the defaults in London for post-graduate education, and has placed at the disposal of graduates a fine assortment of sound teaching, for English teachers are as good and as enthusiastic, given the appropriate milieu, as any European professors. But our great hospitals have a routine for the training of their undergraduate students which assorts ill with post-graduate lecturing and demonstration, and all the experience of those who have thought long and worked hard at the subject points to the institution of a great clinical centre. Meantime the Fellowship of Medicine will continue its useful ministrations. As we are reminded in its new organ, the Minister of Health has appointed a committee, with this reference: To draw up a practicable scheme of post-graduate medical education centred in London. The Committee is strongly constituted and has the situation left by the Athlone Committee in May, 1921, to deal with. The Athlone Committee recommended that a school attached to a hospital centrally situated in London should be devoted solely to post-graduate medical education, a school of the University of London being suggested. A meeting was summoned early in this year by the Fellowship of Medicine, at which free expression of opinion on the existing arrangements for post-graduate teaching was invited, when representatives of the Military and Naval Services expressed satisfaction with the arrangements made for their medical officers; but the conditions in the Services are special, and too much stress must not be laid upon success along this line, gratifying though it is.

A second foreword to the *Post-Graduate Medical Journal* is supplied by Sir BERKELEY MOYNIHAN, who deplores the readiness with which the practitioner—only too naturally—is content to practise on the medicine learned in student days, not realising the joy of dwelling in a land of advancing frontiers. He urges the necessity for practitioners, despite the over busy day to which he pays tribute, to find short periods for reading, as well as leisure to attend meetings of a medical society and the instructions of a post-graduate class, adding with regard to the last the wise comment that discussion and controversy are of the very spirit of scholarship and that comradeship with those who labour transforms competitors into colleagues. The great thing on which all are agreed, then, is that there should be opportunities for practitioners to keep abreast of recent knowledge by contact with those who have the ability and the willingness to teach. And in order to meet this great need of "keeping in touch" the inevitable conclusion is reached that in London, and, indeed, in other large cities, there should be a medical school for post-graduate workers. As far as London is concerned, the cost of providing such a centre, with lecture halls, laboratories, and perhaps a hostel where post-graduates could lodge, has caused the scheme perpetually to be set aside, but it is becoming more and more obvious that only by the foundation of a real post-graduate institute can London take up its right place as the centre of medical teaching not only for the metropolis but for the Empire, attracting also the keenest minds among foreigners. The ideal should be ever present.

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THE SOCIAL HYGIENE CONGRESS.

SOON after the outbreak of war in 1914 the Eugenics Education Society addressed a request to the Royal Medical Colleges to support a movement for national education on the subject of venereal diseases. The time was opportune; the Royal Commission on Venereal Disease had just brought in a report making clear for the first time the great prevalence of venereal disease and the inadequacy of the provision for its treatment, especially in London. The segregation in camps of large numbers of sexually active men made immediate action desirable, and a National Council was formed, which held its inaugural meeting on Nov. 11th, 1914, when the aims and objects, as set out, may be summed up as follows:—

To provide public information and medical education, to organise early treatment, and to promote legislative reforms. A strong executive committee was constituted with Dr. Douglas White and Mrs. Gotto as honorary secretaries.

Eleven momentous years have elapsed since this beginning was made, and this week we report the second Imperial Social Hygiene Congress which is the culmination of the work of the National Council. It is difficult for those without long memories to picture the change of fact and heart which have occurred during those 11 years. It was not an impossible thing at that time for a medical student in his clinical years not to know the meaning of venereal disease. The Secretary of State for the Colonies reminded the Congress that in 1911 he found it all but impossible to get a single Member of Parliament to say a word on the subject of venereal disease, and the conspiracy of silence continued almost unbroken until the National Council began its work. Facilities for treatment would be idle unless the public knew what venereal disease is and where these facilities were to be obtained, but enlightenment has been so complete that during the year 1924 over 1,500,000 attendances were made at treatment centres in England and 81,806 attendances in Wales. During little more than a decade the treatment of venereal disease, previously limited to a tiny group of "lock" hospitals and the casual care of general out-patient clinics, was replaced by expert treatment under conditions of entire confidence and secrecy at 184 centres in England and 10 centres in Wales. At several centres in London continuous out-patient venereal clinics are held daily, and a similar centre for women only was recently opened at the Royal Free Hospital; auxiliary clinics for the treatment of mothers and infants are under consideration at the present time in Wales. The effect of all this on the incidence of disease is now beginning to make itself felt, for comparing 1924 with 1920 the number of new cases of syphilis has fallen by nearly 50 per cent., and new cases of gonorrhœa by 23 per cent. Legislative action in this country has not taken any stringent forms. The Venereal Diseases Act, passed in 1917, was little in advance of the public opinion of the day or of the habits of the people, and the only subsequent legislative Act in this country has been the useful little measure providing gratuitous treatment for the mariner at various ports of call. During this time, however, some of the self-governing Dominions have passed legislation making notification a statutory duty on the medical practitioner and even enjoining patients themselves to report within a specified time in face of severe penalty. These measures, as Mr. C. M. Kohan pointed out at the Congress, have, as yet, proved little more than pious aspirations. Queensland, the pioneer of compulsory measures, continues satisfied with their administrative aspect, while regretting the unwillingness of its medical men to fall in completely with the obligation laid upon them. In this country we have remained content with the secrecy of the clinics, hoping thereby to secure the efficient treatment of many who otherwise would be unwilling to attend. Unfortunately, in the last recorded year 40 per cent. of the total cases ceased to attend before treatment was complete, although many of them are believed to have been rendered non-infective before ceasing their attendance. More successful following-up measures have been instituted in certain places, especially Edinburgh.

While all this registers tremendous progress, on which it is well to insist afresh, the situation with regard to the volume of venereal disease is one which must continue to command the attention of the British Social Hygiene Council for many years ahead. Present incidence of congenital syphilis is described by Colonel L. W. Harrison as a reproach, when the disease is a horror which can be completely prevented. The returns for 1924 showed 2532 cases of venereal disease in England under the age of 7 years, 1826 of these being congenital syphilis, the balance largely being those who acquired venereal disease apart from sexual misconduct. In the Navy, for the latest year in which complete figures are yet available, there were, for every 1000 men 113 entries for venereal disease during that year, and the average daily number of sick men was 892. In spite of a recent decline the rate of venereal disease in the Army in 1922 was still 25·9 per 1000, and Major E. C. Lambkin felt it incumbent upon him to assure the Congress that the Army did not condone or encourage sexual irregularity. As a matter of fact 20 per cent. of soldiers became infected while absent on leave; and special difficulties are contended with abroad, particularly in Turkey and on the Rhine—for in Cologne alone there are reputed to be 6000 prostitutes. Similarly, the risk of China and Cape Town to the sailor is very imminent. These figures are sufficiently alarming and indicate that the problems, especially abroad, are not by any means within sight of solution. Ignorance, indifference, and fatalism in the colonies take the place of the despairing public outlook and the deliberate concealment which constitute the chief difficulties at home. Mr. Amery indicated the existence of a Committee of Civil Research, corresponding on the civil side to the Committee of Imperial Defence, which was concerned for the security of national life. The Congress provided opportunity for exchange of information in regard to venereal disease over a very wide area, which may well be considered by this Committee. In Fiji, Dr. P. T. Harper expects syphilis to appear amongst the Fijians in proportion as the ritual inoculation with yaws declines. In Nyasaland, where the problem seems to be primarily political. Dr. G. M. Sanderson aims at training up a native medical profession to spread enlightenment in the villages. In Palestine Dr. J. W. Harkness regards the mild endemic syphilis of the rural population as the result of social rather than sexual intercourse. Amongst such people education must be by word of mouth and is a slow and laborious process; pictorial illustration is hard to devise; to the unimaginative native an enlarged culex on the screen may be indistinguishable from a camel. In India, where Sir Leonard Rogers regards early marriage as a safeguard, and where the Central Provinces are still relatively free from disease, Major-General A. Hooton can see little prospect of progress until more efficient instruction is offered at the medical colleges and schools. A moving picture was drawn by Dr. Kathleen Vaughan of venereal disease in Kashmir, where there is no teaching of any kind on the subject for boys and girls except that given in the few mission schools. The British Social Hygiene Council has in prospect a campaign of social service which will embrace the education in hygienic living, a serious attempt to prevent disease by improving environment, and a review of all aspects of the problem in the Empire.

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THE MEDICAL ASPECT OF INDUSTRY.

In his presidential address to the Brighton and Sussex Medico-Chirurgical Society on Oct. 1st Mr. H. J. Walker dealt with the work of the factory surgeon as an important branch of preventive medicine, and one likely to receive attention in the present Parliament. After reviewing industrial conditions in the early nineteenth century and the revolution already brought about by factory legislation, he commented on the fact that even in the present year 37 cases of lead poisoning and six of anthrax were reported to the Home Office, in addition to seven other cases of lead poisoning amongst house painters and plumbers, and he went on to remark on the possibility of eliminating altogether industrial injury from such things as lead, mercury, arsenic, phosphorus, or anthrax. Turning to the larger aspect of industrial problems, Mr. Walker quoted with approval the statement that industrial medicine, if properly applied, might effect a saving of many millions a year in sickness benefit. At present it is only in a few dangerous trades that medical inspection is compulsory. Little objection, he thought, would be taken by the workman to medical examination, provided he thoroughly understood it was for his own benefit. Men continued to work, when unfit to do so, day after day for fear of losing their employment, and there was no doubt that they lost more than they gained in the long run. "Some time back," said Mr. Walker, "I was called to see a man who was found dead in a railway carriage. He was employed in the building line and had been seen running to catch his early morning train. On post-mortem I found a large calculus in one of the valves of his heart. I was informed by his wife that the man had not consulted a doctor for many years and had never complained of any trouble. In another case a man knocked his shin whilst at his work and sought no medical advice until he was incapacitated from work, when on examination the leg was found to be acutely septic. Osteitis of the tibia had developed, necessitating an operation with a prolonged stay in hospital, and a final appeal to the law courts for compensation." He often saw cases of dermatitis and eczematous ulceration of hands and forearms caused by irritation from flour, sugar, mercury, fur preparations or various solutions used in factories. When these cases came for disablement certificates, in order to obtain compensation, the disease in most cases was far advanced, the man having continued his employment until the irritation and annoyance had become almost unendurable. The Factory Bill now before Parliament suggests that young persons up to the age of 18 should be medically examined before starting work. After that age they are supposed to be capable of looking after themselves. Of this, Mr. Walker is very doubtful. "Under the present economical system," he said, "the exigencies of work prevent proper attention being given to health. I would suggest that in all factories and workshops young persons, up to the age of 18, should be examined every six months, a health register being kept with full particulars of the work. If not suitable, and the employer and the employee wish to continue with the same work, the latter should be examined again in six months. If the work is then found to be deleterious to the employee's health, the medical attendant should have power to suspend him from that work. All employees should be compelled to seek medical advice for all injuries and diseases of more than a week's duration, and should not be allowed to return to work without a medical certificate of fitness. Examinations should be compulsory every six months in trades which have a tendency to undermine the employee's health." Mr. Walker admits that there must be individual hardships, but contends that the gain to the community at large would far exceed any hardship to the individual. The expense incurred would be compensated for by filling factories and workshops with healthy and willing workers. More unrest, Mr. Walker thinks, is caused in the industrial world by poor health and uncongenial surroundings than from low wages and all other reasons combined.

BRITISH DENTAL HOSPITAL.—The annual general meeting will be held at the rooms of the British Dental Association, 23, Russell-square, London, W.C., on Thursday, Oct. 15th, at 8 P.M., when Dr. James Wheatley, county medical officer of health and school medical officer, Salop, will give an address on Dental Propaganda. Sir Harry Baldwin, the President, will preside.

Annotations.

"Ne quid nimis."

THE CARE OF THE PRIMIGRAVIDA.

A CORRESPONDENT has suggested that it should be made obligatory for every woman in her first labour to be attended by a registered medical practitioner. The question is important and difficult to answer off-hand. Undoubtedly, at the present time certified midwives conduct a large proportion of first labours without medical assistance, for the most part with complete success. Our correspondent maintains, however, that the first labour is liable to certain complications, which require the wider knowledge and greater skill of the qualified practitioner to recognise and deal with them in time to prevent undesirable results. The practice of the metropolitan hospitals indicates to a certain extent the attitude of the best obstetrical authorities. If they do not recognise any necessity for distinguishing between the primipara and the multipara, it is probable that the present safeguards that surround the practice of midwifery are adequate. The district maternity work of a London hospital is conducted by medical students, from whom different hospitals demand a different standard of qualification. We have inquired of several London hospitals what these standards are. One demands an attendance at five cases before the student conducts an outside confinement; one, under a new regulation, exacts a month's experience; while all others which have a lying-in ward demand a certain amount of inside training. In all except one hospital a qualified obstetrician accompanies the student on his first one or two district cases. A medical student who has completed his clerkship and dressership should have a wider outlook than the midwife, but his brief experience of the labour ward will not make him her equal in her own specialty of obstetrics. If, therefore, the student is considered sufficiently qualified after this training to attend all classes of confinements, it would appear that a midwife who has taken her C.M.B. diploma can quite well be trusted with first labours under the existing legal safeguards. It is interesting to note that none of the hospitals who have favoured us with their opinions make any distinction in practice between primiparæ and others. Nearly all these hospitals, however, attach great importance to the work of the antenatal clinics that they maintain. All women who desire to be attended from the hospital for their confinement are seen at the antenatal clinic early in their pregnancy for a thorough examination, and are examined again towards the end of their time, so that any abnormality that might interfere with labour can be properly treated and its evil results anticipated. Unfortunately, however, only a very small number, comparatively, of expectant mothers in the country come under antenatal examination, and the distinction between primiparæ and others, which London hospitals disregard, may have to be considered among women who undergo their confinements in their own homes. But antenatal work at welfare clinics is slowly but surely making itself felt. A report,[1] which has just reached us, is based on replies received from 500 out of the 641 antenatal centres so far established. These indicate that vigorous work is being carried on in the great majority of areas covered. In 61 per cent. of the centres the medical officer in charge of the clinic has the status or the experience of an obstetric specialist, while most of the remaining 39 per cent. are, or have been, in general practice with large numbers of midwifery cases. An interesting point raised was as to the practice at the various centres with regard to vaginal examination. In only 18 per cent. of clinics was this examination made as a routine procedure, 69 per cent. making it only where considered advisable. This group may increase as experience in antenatal work grows. In the light of available evidence we hardly think that alteration in the existing law would be justified.

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[1] Report into the Work of Existing Antenatal Centres, being an Inquiry based upon a Questionnaire sent out by the Association of Infant Welfare and Maternity Centres (117, Piccadilly, London, W. 1s.).

SOME LITERARY DEATH-BEDS.

STRESS of life counts high in the literary world to-day. Nevertheless litterateurs of the nineteenth century died, as a rule, at an earlier age than they do now, and they seem to have died of curious ailments. This is apparent from the perusal of Mr. Stewart Ellis's "Mainly Victorian," a collection of essays and biographical notices recently published. The author deals with 30 or more distinguished authors and others connected with English literature whose busy, but often not exceptional, lives ended prematurely during the nineteenth century. Charles Lamb, with some of whose hitherto unpublished letters the volume opens, died, if not at too early an age, then at least out of due season. At the age of 60 he stumbled and slightly injured his face. This brought on erysipelas, which proved fatal. Latterly he had been a hard drinker, but his life had been one of steady indoor work with no particular excitement or excess. Ann Radcliffe, a popular writer of terrifying stories, died at the age of 59, the cause of death not being stated, though her state at the last was one of extreme weakness, and her last words were the comfortable phrase, "There is some substance in that," in allusion to some nourishment administered to her at midnight. Richard Harris Barham, a convivial Church dignitary, author of the famous "Ingoldsby Legends," died prematurely. In 1844 a severe chill brought on violent inflammation of the throat, from which he continually rallied only to become weaker. He was moved restlessly from place to place in search of health, and his old bizarre humour flashed forth for the last time with the remark, as he was carried into his London house, "that he was indeed at Amen Corner." Mr. Ellis then describes the death-bed scene, "when a man of but 56 years of age, and with his brilliant mental powers at their zenith, calmly faced with the bravest fortitude the most appalling experience of humanity." Sorrow at the loss of children and friends may have contributed to early collapse in the sensitive merry writer, but that is not enough to account for a typical nineteenth century death, at once premature and caused by seemingly remediable conditions. Captain Marryat died of cerebral hæmorrhage at the age of 56 in 1847. He also was carried about from place to place in search of a better climate, as though that would assist him. At the last he was kept alive on lemonade, dying in stupor. He had been an intrepid and hard-working naval commander, one who consistently burnt the candle at both ends. He wrote against time, and neglected an old tendency to rupture of blood-vessels. His feverish literary career gives the lie to the assumed placidity and uneventfulness of the 'forties and 'fifties. Thackeray died at the age of 52, after foreseeing his end for a long time. Surtees, the creator of "Jorrocks," died of angina pectoris at the age of 61. He had apparently had no warning of this. Whyte Melville was killed in the hunting field at the age of 57, and he does not therefore come within our purview, but Frank Smedley, author of "Frank Fairleigh" and other stirring romances, was a typical invalid author, who made up to himself for his limitations in the matter of health by the vividness of the adventures he described. In this he resembled R. L. Stevenson, the consumptive creator of "Treasure Island." Smedley was laid up from early youth by an affection of a paralytic nature, which gradually deprived him of the use of his legs and brought on what was then diagnosed as "irritation of the brain." He wrote against his doctor's orders, overworked, and died at the age of 45, passing at the last through a series of epileptic fits. G. P. R. James died a complete wreck, mental and physical, at the age of 59. At the same age died Sheridan Le Fanu. The death of Charles Dickens was self-induced, for he insisted on giving his recitations long after he had been warned against every kind of activity. His medical attendant and friend, Carr Beard, could only sit by and report on the degrees of excitement reached by the ultra-dramatic reciter.

TREATMENT OF INTERSTITIAL KERATITIS.

UP till now there are few ophthalmologists who have displayed any enthusiasm for the treatment of interstial keratitis by salvarsan or its allied compounds. According to most of the prevailing authorities, anti-syphilitic treatment has very little effect. "Unfortunately," says Fuchs, "we must say that in many cases, parenchymatous keratitis, even under the most careful treatment, runs a course that is not essentially different from what would have been the case without any treatment at all." Foster Moore records his conviction that neither mercury nor any of the salvarsan compounds will prevent the onset of interstitial keratitis or the other eye symptoms of congenital syphilis; it is hardly to be expected, then, he says, that they will bring about a cure when the disease is established.[1] On the other hand, de Schweinitz believes that treatment by the salvarsan compounds is most valuable. "Although it does not materially hasten the absorption of the corneal deposits it definitely shortens the duration of the disease."[2] This more hopeful opinion has recently received support from Mr. R. Lindsay Rea, who claims that the end-results of cases treated with injections of novarsenobillon are very decidedly better than if not so treated.[3]

A systematic investigation of the question has been undertaken by Dr. Maud Carvill and Dr. George S. Derby at the Massachusetts Eye and Ear Infirmary.[4] Previous to 1910 the general treatment of interstitial keratitis was carried out at this institution in a more or less desultory fashion. Since 1910 anti-syphilitic treatment has been systematically carried out for all these patients—viz., numerous injections of arsphenamin or allied preparations, mercurials by injection, inunction, and by the mouth, in addition to iodides when indicated. For purposes of comparison 100 of the "untreated" cases were collected and 100 of the "treated" cases and the results tabulated. In the case of the former group the average period that had elapsed since the cessation of acute symptoms was nine and three-quarter years. In the case of the latter, two and three-quarter years. Except for the shorter period of observation of these "treated" cases the comparison seems a fair one. The result is decidedly in favour of treatment. At the most recent examination vision of 20/30 or better was found in 58 per cent. of the treated cases, and in only 28 per cent. of the untreated. In the treated cases only 15 out of 178 eyes had a vision of less than 20/100. One eye had only perception of light. In the untreated, 45 eyes out of 179 had a vision of less than 20/100. Five eyes had light perception only, and in five vision was nil. In spite of the possible fallacy involved in the different period of observation in the two groups these figures cannot be ignored. Another comparison of the number of cases in which recurrences occurred is even more striking, as in this the difference in period of observation was eliminated. In the untreated cases during the first three years recurrences took place in 24 eyes (13 per cent.), as compared with 3·6 per cent. among the treated cases. In the light of these recent observations on both sides of the Atlantic it seems desirable that ophthalmic surgeons should turn their attention to this subject which is of considerable importance. The incidence of the disease is about 0·5 per cent. of the total number of patients at most ophthalmic hospitals, and children blind from it are by no means unknown in the blind schools.

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[1] Medical Ophthalmology, p. 193.

[2] Diseases of the Eye, tenth ed., p. 303.

[3] THE LANCET, August 22nd, 1925.

[4] Boston Medical and Surgical Journal, August 27th, 1925.

APT PATIENTS.

OUR Vienna correspondent informs us of an interesting experiment that has been carried out at Prof. Pirquet's Children's Clinic in that city. When insulin was discovered some three years ago Prof. Pirquet began the treatment of 30 diabetic children by this means, the cost of which was met by grants from the union of the Vienna "sick clubs" (*Krankenkassen*). Insulin at that time was very expensive, and, in addition to the actual cost of the drug, the unfortunate sufferers appeared doomed to pay medical fees throughout their lives for the minor operation of having the medicament injected subcutaneously. Prof. Pirquet, therefore, attempted the daring innovation of teaching these children to inject themselves. A regular course of instruction was instituted, and the children were taught the principles of sterilisation, how to handle a syringe, how to make an injection, and further, they learned the dietetic values of the various foods suitable for their condition. The older children were taught how to cook their own food. Later on the course was extended to include the relations of diebetic children, and full instruction was given on all points relating to the treatment of the disease, including urine tests. The experiment proved successful, and in a short time it was possible to allow all the children to return to their homes, with the exception of a few serious cases. The children are examined medically every few weeks for control of weight and urine, otherwise they are free from the shadow of hospitalisation. A similar experiment is now being made with cases of myxœdema. This experiment, apart from the happy results it has achieved in individual cases, is of importance in showing how the hospital can be used as a teaching centre for patients as well as students.

THE ERECT POSTURE AND ITS DRAWBACKS.

WHEN by standing upright on our feet we gained our predominance over animals which crouch or crawl, we brought on ourselves by way of payment a host of troubles of which we seem to have reached only the beginning. Dr. René Lambolez, in a recent article in a French medical journal,[1] has described some of them, and as a mathematician has gone very deeply into the dynamics of the erect position, far more deeply than most readers will follow. In addition to those handicaps of abdominal and circulatory trouble that are familiar results of bipedal progress, he deals with curvature of the spine and malformation of the hips, discussing especially scoliosis. Monod wrote in a thesis in 1909 that "it is not the exigencies of study that make a scoliotic, but the fact that [the child] attends school during the years when he is exceptionally liable to scoliosis," and Dr. Lambolez points out that if there is a tendency to deformity in a child, prolonged and constantly repeated harmful attitudes will produce it. The especial importance of the vertical position is in those scolioses that result from asymmetry of the fifth lumbar vertebra, or the so-called "static" forms that are due to an inequality in the length of the legs, malformed hip, or a unilateral flat-foot. The term covers, of course, a vast number of malformations due to different causes, and their treatment can be neither exclusively medical nor exclusively orthopædic. True scoliosis of bony origin benefits immensely in its early stages from rest in a recumbent position; later on the deviation from the vertical may have to be compensated by appliances. Pott's disease, before deformity appears and while it is still in the stage of functional impotence, is also best treated by complete rest and relieving the vertebræ from the strain of the upright position. Dr. Lambolez quotes Prof. Calot as authority for his statement that minor malformations of the hip-joint are at the bottom of half the ailments wrongly diagnosed as coxalgia, three-quarters of those diagnosed as tuberculosis of the neck, and nine-tenths of those that pass as localised rheumatism or dry arthritis, and he also maintains that all the coxa plana cases observed by Waldenstrom and all the "osteochondritis" of Perthes can be traced to slight defects in the hip-joint alone. Another unfamiliar suggestion in his article is the treatment of obesity by continuous lying down. The recumbent position facilitates the action of the heart and helps urination, so that the watery accumulations, which, as much as fat, cause this condition, are gradually eliminated from the body. Dr. Lambolez's article will stimulate many who do not agree with him.

MEDICAL STUDY IN SWITZERLAND.

SWITZERLAND affords opportunities for postgraduate study which are perhaps not as well known as they might be. There are seven Cantonal or State universities, five of which have a Faculty of Medicine and grant the M.D. degree, the language of instruction being French at Lausanne and Geneva, and German at Bâle, Bern, and Zürich. Bern and Lausanne, in particular, welcome British students, and their regulations are accommodative. The University of Bern has some 65 professors in the Faculty of Medicine, including dentistry, and the number of regular students is about 1600, with 300 *auditeurs*; the University of Lausanne has some 35 professors in the Faculty of Medicine, and about 800 students and 200 *auditeurs*. The choice is governed chiefly by considerations of language and climate. Bern has many attractions as an international centre and its hospital buildings are pleasantly grouped in a sort of garden suburb. Lausanne is situated high up overlooking the Lake of Geneva. The Cantonal Hospital is divided into two main sections, the general hospital (medical and surgical) situated in the Avenue du Buglon containing some 500 beds, and the new maternity and children's blocks, built in 1916, across the road, containing an additional 200 beds each, the whole in design, construction, and equipment being probably unsurpassed elsewhere.

British practitioners are received upon the same footing as the Swiss holding the Swiss Federal Diploma, and can obtain the M.D. degree on complying with the following regulations:—

(I. (*a*)) Matriculation in the University and registration as a student, on production of a matriculation certificate of any British University, or of any preliminary examination recognised by the G.M.C. for the purposes of registering as a medical student; (*b*) Production of the certificate of the degree or diploma qualifying for practice in the U.K. and the certificate of registration as a medical practitioner in the U.K. (II.) Undergoing with success a colloquium—i.e., a viva-voce examination—in any three of the subjects of the final medical examination, at the choice of the candidate—e.g., medicine, surgery, diseases of children, or midwifery. (III.) The presentation of a thesis for the doctorate, which has been prepared and completed in the clinic under the direction of one of the professors of the Faculty of Medicine, in any subject in the medical curriculum.

Most of the professors speak English fluently, and the choice of the subject for the thesis may be made by the candidate and approved by the professor, or may be made by the professor himself. The standard, though high, is within the reach of steady work during the required semester of residence (October–March). After the thesis has been accepted by the Faculty of Medicine, its printing is authorised by the Dean, and 200 copies have to be handed in. The fees are roughly as follows On matriculation, Fr.20; on inscription for the colloquium, usually half-way through the semester, Fr.50; on presentation of thesis, Fr.200; diploma and graduation, Fr.25; courses, lectures, library, and laboratory fees, about Fr.80; printing of thesis, about £7 to £12. It is possible to live comfortably for £10 per month. The calendar and regulations can be obtained from the secretary of the university, and application for admission should be made to the Dean of the Faculty of Medicine, and to the professor in the subject in which the candidate wishes to do his thesis. The Student's Guide is issued in October and April (Guide de l'Etudiant), and may be obtained for 50 cents from F. Haeshel-Dufey, 3 Rue Centrale, Lausanne, or from the Office Central Universitaire, Bern.

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[1] Considérations sur la Station Verticale et ses Conséquences. By Dr. René Lambolez, Faculté de Médecine of Nancy. La Vie Médicale, August 28th, 1925.

The Academic Diploma of M.D., which has so far been considered, does not confer the right to practise in Switzerland, which requires the possession of the State or Federal Diploma. Examinations for this diploma are conducted by a board of examiners drawn from all the universities. The Swiss students, after matriculating in one of the universities, pursue a five years' course of study, and take the first, second, and final examinations of the Federal Diploma. When this has been obtained they become *médecins fédérals*, and are entitled to practise in Switzerland. A year or two later they proceed to the M.D. degree of their Alma Mater, the Federal Diploma thus corresponding to our M.B. degree. It is not made easy for foreigners to acquire the right to practise in Switzerland, in view of the large number of Swiss qualified medical men and women and the comparative cheapness of higher education in Switzerland. It is obligatory to matriculate and to pass all the qualifying examinations, and even when this is done the diploma is not assured. Every canton, however, has the right to license practice within its own borders.

THE MENTAL PATIENT'S CHANCE OF RECOVERY.

There is no doubt that the average practitioner, and still more the layman, holds the gloomiest views on the chances of a patient with mental disease. The last thing the relatives will do for such a patient is to put him under proper treatment, and the general practitioner, when called in, will often give him up at a glance as incurable. The attitude seems to be that mental patients simply go from bad to worse, and even if they appear to be cured they always break down again afterwards, so that the psychiatrist hardly ever sees a mental case until it has reached an advanced stage.

The way out of this undesirable situation is for the psychiatrist to persuade the practitioner and public by unimpeachable argument, first, that a mental patient has as good a chance of recovering as a medical or surgical one, and secondly, that like the latter, his chance will be considerably improved if he is treated in good time. It is therefore encouraging to read in the *Journal of the American Medical Association* a lecture by Dr. Earl D. Bond, of the Pennsylvania Hospital, in which he analyses 1054 consecutive admissions, including all the graver forms of mental disease, whose history has been followed for at least five years starting from the date of admission. Thirty were lost, and the percentages of the remaining 1024 are as follows: Recovered and stayed well, 26·7; improved, 14·5; died, 32·3; unimproved, 25·5. He remarks that some of the recovered patients attained a higher level of health than they had been able to reach before their illness, and quotes some very striking individual cases who recovered completely from persecutory delusions, hallucinations, paranoia, and melancholia. No patient is counted as recovered who has relapsed at any time since discharge, and the "improved" are generally hard workers who, although they suffer from occasional relapses, are able to earn their living. The deaths are heavy, as is natural over such a long period in a group that includes many elderly people. Influenza in 1918 accounted for several, and many other causes of death were not related to the psychoses in any way. All the patients with senile and arteriosclerotic psychoses, however, died during the observation period. The failures are dementia præcox cases and manic-depressive psychotics with prolonged or frequent attacks.

On the physical and surgical side of medicine there are plenty of statistics about particular diseases, but hardly any of consecutive patients irrespective of what they suffer from. In Dr. Bond's opinion the surgeon or physician would be satisfied with a full return to function in 25 per cent. of his consecutive cases, judged from five to ten years after the beginning of treatment. Whether this is a good estimate or not, Dr. Bond's own results give him the right to challenge the general practitioner to revise his prognosis of the average mental disorder. More statistics of this kind are wanted, and other psychiatrists might well follow Dr. Bond's example. Incidentally, he made out a very good case for holding up the diagnosis of dementia præcox until a long time of observation has elapsed. This disease is incurable, but its symptoms are frequently counterfeited by other and curable diseases, and many cases prematurely diagnosed as dementia præcox have recovered. Their chances are naturally much better if judgment is reserved, and the psychiatrist should wait a very long time before he decides to abandon them as hopeless.

STICKING-PLASTER DERMATITIS.

In the course of a year the medical profession uses many miles of sticking-plaster on patients of all ages and conditions. It is therefore disconcerting to read an article by Dr. H. W. Siemens in the Munich Medical Weekly of August 7th, in which he states that 1 per cent. of persons have an idiosyncrasy that makes the homely sticking-plaster an enemy. Rashes, blisters, eczemas appear from its use that may last a month and give severe trouble. The offending substance is "dammar" resin, that comes from the sap of one of the evergreens and is the favourite mucilage of plaster manufacturers. The irritation is not an acid one, for the resin acids have been proved harmless when tried by themselves. Dr. Siemens found three cases of individual susceptibility in the Munich University Skin and General Clinic, and tested them with dammar resin, dammar-oleic acids, pine resin, colophonium, and a brand of plaster called Helfoplast that contains no resin. The dammar, introduced into the upper arm by scarification, produced an erythema after 24 hours that was still more marked after 48. He tested his first two subjects again after three and a half and four months; the first showed less tendency to react and the second much more. The third case was the most interesting, a college student, male, 24 years old. A strip of plaster over a cut on the left forearm had brought out a severe bullous dermatitis, and tests with various resins and their derivatives, repeated after three weeks, showed a slight reaction to dammar resin and plaster and none to other substances. On the third day of the later test two large strips of plaster were applied to the right upper and fore-arm. They gave a positive reaction at the place of application after two days, and an outbreak of papulous eczema round the original wound and the sites of the earlier test. After 12 days the erythematous patches round the plaster were not very severe, but the reaction on the earlier sites was intensely irritable. The nodules were thickly and widely scattered and had been decapitated by scratching, healing with a serous scab. The reaction on the site of the old tests was less than that on the original wound. Dr. Siemens finds that this idiosyncrasy is not related to eczema liability, nor especially found in eczematous subjects. It would be interesting to know if any parallel results are forthcoming in this country. The subject should certainly be investigated further, since if the 1 per cent. incidence that Bloch demonstrated is uniform, many cases must occur that are not traced to their real cause. Dr. Siemens is still doubtful about the exact nature of this idiosyncrasy, and the fluctuations which he demonstrated in his first and second cases warn us against accepting it immediately as constitutional. The experiments remind us that skin disease as a whole is an obscure subject.

HEALTH OF THE U.S.A. IN 1925.

IN spite of distressingly hot weather in June the health record of the United States has been good so far this year. According to a preliminary report by Surgeon-General Cumming, of the U.S. Public Health Service, most of the commoner communicable diseases have been less destructive to life and health than usual. The death-rate for June was considerably higher than the average for that month owing, in Dr. Cumming's opinion, to the heat waves which then prevailed over a large part of the United States. During July and August the States which report regularly to the U.S. Public Health Service have recorded approximately 6400 cases of diphtheria. Last year for the corresponding period these same States reported nearly 8100 cases, this year's figures showing a decrease for the period of 20 per cent. In the same period measles has indicated a decrease of 27 per cent., while scarlet fever has decreased 14 per cent. On the other hand, there has been a definite increase in poliomyelitis. During the spring and summer months the prevalence of this disease usually increases, but this year 32 States reported 1463 cases of poliomyelitis for eight summer weeks, as against 635 for the corresponding period last year. This increase was particularly noticeable in California, Minnesota, Missouri, New Jersey, North Dakota, South Carolina, and Wisconsin. Typhoid, too, has increased. Decreasing for many years, the general death-rate per 100,000 population in the registration area fell from 35·9 in 1900 to 6·8 in 1923. Since July, however, 33 States have reported 7173 cases, which may be compared with 5013 cases last year, an increase of 43 per cent. Some of this increase may, of course, be due to more accurate and complete reporting of cases. The ports of Oakland and San Pedro, Cal., and New Orleans, La., have been declared free from plague, and outgoing quarantine measures have been discontinued. The Mexican authorities, upon information tendered by the U.S. Public Health Service, have agreed to the discontinuance of the disinfection of mails from Los Angeles, and also to the suspension of the fumigation of freight trains from that city, except in cases in which the Public Health Service deem this measure necessary. Because of the absence of yellow fever from Mexican, Central and South American ports, and the very low incidence of this disease, even in countries in which it is present, there has been no close quarantine this year on account of yellow fever, which means, of course, that there has been no detention of passengers. Dr. Cumming expresses the hope that the authorities of those countries in which yellow fever infection still persists will continue the work of mosquito extermination until quarantine measures will no longer be needed.

Sir Frederick Mott will deliver the Harveian Oration before the Royal College of Physicians of London, Pall Mall East, on Monday, Oct. 19th, at 4 P.M.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION.—During October, November, and December a series of lectures on Tuberculosis will be delivered in the Lecture Room of the Medical Society of London, 11, Chandos-street, at 5.30 P.M. The opening lecture will be given by Dr. L. S. Burrell on "Tuberculosis from the Physician's Viewpoint." All members of the medical profession will be welcome. A two weeks' combined course in Diseases of Children will be given from Oct. 12th, in which the Paddington Green Children's Hospital, Victoria Hospital, and the Children's Clinic will participate. There will be morning and afternoon sessions. At St. Peter's Hospital a four weeks' course in Urology will be held from Oct. 19th to Nov. 14th. From Oct. 26th to Nov. 20th the St. John's Hospital will hold a special course in Dermatology comprising pathology, clinical instruction, and lectures. There will be a two weeks' intensive course in Medicine, Surgery, and the Special Departments at the Royal Northern Hospital from Oct. 26th to Nov. 7th. Application for copies of the syllabuses, as also the Fellowship general programme, should be made to the Secretary at 1, Wimpole-street, London, W. 1.

Modern Technique in Treatment.

A Series of Special Articles, contributed by invitation, on the Treatment of Medical and Surgical Conditions.

CLXII.—TREATMENT OF POST-OPERATIVE PULMONARY COMPLICATIONS.

WHEN abnormal physical signs are detected in the lungs soon after an operation it is usually taken for granted that a post-operative complication has occurred, and usually the anæsthetic is blamed for the so-called "pneumonia" or "broncho-pneumonia." But a careful examination of the lungs in a large proportion of acute abdominal cases will reveal definite abnormal physical signs before operation. Unless these are detected, it is difficult to appreciate the significance of any pulmonary change that may be found after operation, especially as very similar signs may result from a purely post-operative condition. Briefly, these signs (which are nearly always confined to the right lung) are increase of size in the right half of the chest, raising of the liver dullness in the nipple line to the fifth rib or fourth space, impairment of percussion note, and diminution of breath-sounds (which are never definitely bronchial) over the base of the right lung, especially at a point 1½ in. below and to the left of the angle of the scapula; the apex beat is in the normal situation. By means of X ray screening the right half of the diaphragm is seen to be raised and its range of movement limited, though what movement there is appears to be an active one. These signs are always present and occur at a very early stage when there is inflammation of the peritoneum in the upper abdomen, but with diminishing frequency as the inflammation is situated further from the diaphragm. They are constantly present in retro-cæcal appendicitis and when suppurative peritonitis is spreading up from the pelvis, and occur in cholecystitis and perinephritis; but they are absent in pyelitis, cholelithiasis unaccompanied by cholecystitis, all forms of colic, tuberculous peritonitis, salpingitis, unless there is a spreading peritonitis, in appendicitis confined to the pelvis, and in pneumonia or diaphragmatic pleurisy. The measurement of the chest is conveniently taken with a saddle-tape measure placed just below the nipples in males and below the breasts in females. The difference is often as much as 1½ in., but an increase of only ½ in. may be regarded as pathological. Obvious fallacies are spinal curvature or old lung disease.

The explanation of these signs is not difficult; just as impaired movement of the anterior abdominal wall is an early sign of peritonitis, so is impaired action of the diaphragm. The latter is not inactive, but its excursion is limited, and what movement remains is apparently able to aerate the lung sufficiently to prevent any great degree of collapse. The liver rises in consequence of the partial collapse of the lung, and by its shape causes an enlargement of the right side of the chest. The treatment is, of course, mainly surgical, but after operation the patient should be encouraged to breathe deeply, and not allowed to remain too long in one position, as there is danger of hypostatic congestion. For the same reason he should be placed in Fowler's position, to avoid as far as possible the pressure of the liver against the diaphragm. Expectorants also help to avoid congestion of the lung base.

POST-OPERATIVE MASSIVE LOBAR COLLAPSE.

There are two forms of this condition: (*a*) collapse with contraction, and (*b*) collapse with enlargement of the corresponding side of the chest wall.

(*a*) *Collapse with Contraction.*—The first symptom is usually sudden pain low down in one side of the chest (usually the right); the temperature rises (102° or 103° F.); respiration quickens and there is some distress which may be acute; after a few hours expectoration of white viscid sputum begins. The physical signs are impaired movement of the affected side of the chest and upper quadrant of the abdominal wall, impaired percussion note, at first diminution or absence of breath-sounds over the lower lobe of the lung, and later well-marked tubular breathing; displacement of the heart towards the affected side, diminution in girth of this side of the chest, inactivity of the diaphragm and upward displacement of the liver, if the collapse is on the right side, or heart, if on the left. The liver dullness may begin as high as the fourth rib, and this upward displacement is a most valuable sign, easy to demonstrate, and constantly present. On screening I have always found the cupola of the diaphragm raised on the side of the collapse and the movement either absent or much restrained, so that the excursion is small and jerky, suggesting tonic contraction.

Differentiation from Pneumonia.

Massive collapse is easily distinguished from post-operative pneumonia by the displacement of the heart and liver, the decrease in size of the affected half of the chest, the viscid white sputum which is never blood-stained or rusty, and the termination which may be as sudden as the crisis of lobar pneumonia, but followed by a much more rapid return of the normal signs of a healthy lung. There is no flush and the skin is usually moist, and has not the hot, dry feeling so often present in pneumonia. The change usually occurs on the third day after the onset of the collapse; the temperature drops to normal or thereabouts, the pain disappears, and the only remaining symptom is the coughing up of the characteristic sputum for another few days. At the same time the diaphragm begins to move in normal fashion.

In certain cases the change is dramatic in its suddenness, which suggests a mechanical cause rather than a pathological change in the lung tissue. The apparent tonic contraction of the diaphragm and the sudden onset closely resemble an attack of asthma, in which condition we also find a rigid (though not raised) diaphragm, which immediately begins to move on cessation of the attack. The similarity has led me to try drugs used to alleviate asthma, and I have found injections of 5 minims of a 1 : 1000 solution of adrenalin the most useful remedy, not only for the treatment of massive collapse, but when given as a prophylactic it seems to lessen the chances of this complication ensuing. It is better to give 5 minims repeatedly than to give larger doses at longer intervals. A second dose may be usefully given in half an hour's time. As a prophylactic 5 minims may be given every six hours for the first 48 hours after operation. Other drugs which are helpful are injections of ½ c.cm. of pituitary extract, or ⅓ gr. of emetine hydrochloride. In addition, small doses of potassium iodide and ammonium carbonate with a few minims of ipecacuanha wine made into a mixture with camphor water, help to liquefy the viscid sputum and so assist its expectoration. Many patients have benefited from the application of a mustard leaf to the side of the neck, which was done with the idea of providing counter-irritation to the phrenic nerve, and with a similar object I have found it of some use to pass a descending constant current down the side of the neck. This form of massive collapse is an alarming complication, but unless pneumonia supervenes (and this happens but rarely) is never by itself fatal.

(*b*) *Collapse with Enlargement of the Chest Wall.*—In massive collapse with enlargement of the affected side there are several points of difference. The onset is painless and gradual; dyspnœa is not marked; the heart and liver are displaced in a similar way, and though the heart is never drawn over so far, the upward displacement of the liver is extreme. When screened the diaphragm can be seen considerably raised, moving very slightly and apparently passively on the affected side, as if paralysed and relaxed. The breath-sounds are feeble, the percussion note is considerably impaired, and bronchial breathing is never as marked or extensive as in the cases associated with contraction of the chest. This is a much more serious complication than that already described and indicates a spread of infection up to the diaphragm and consequent risk of general peritonitis or subphrenic abscess. Treatment is mainly surgical, as there is need of free drainage. Drugs are of little use and adrenalin has no effect. Some cases recover with merely expectant treatment, for the peritoneum can deal successfully with infective organisms in very great measure.

The treatment of any condition involves consideration of the cause. It has been shown that the position and action of the diaphragm are modified in both kinds of post-operative collapse and in the cases which show pre-operative pulmonary signs. The diaphragm is just as much a part of the muscular wall of the abdominal cavity as the rectus abdominis and oblique muscles, and is affected by inflammation beneath it just as are the muscles overlying an inflamed appendix.

That infection greatly modifies diaphragmatic action is clear from a study of 39 cases in which one or other form of collapse of the lung followed operation. (1) Many needed subsequent drainage after the wound had been sewn up, or the wound was found to be suppurating when the stitches were taken out. (2) The more distant the focus of infection, the less likely was the diaphragm to be involved, and inflammation confined to the pelvis never affected it. (3) Subphrenic abscess invariably paralysed the diaphragm. Subsidiary causes of collapse are very large incisions, especially if they extend into the hypochondrium, and rough handling of the sides of the wound at the operation, so injuring the muscles and causing an alteration in the tone of the opposing muscle—i.e., the diaphragm.

A slight stimulation of a muscle causes it to contract, but a severe one removes the power of contraction, which accounts for the two forms of collapse. When the chest is contracted, the infection or stimulus appears to be slight; manifest suppuration seldom ensues and drug treatment is of great use. Where the side of the chest is enlarged, drugs are of little avail and subsequent drainage of the wound, or possibly of a subphrenic abscess, is usually necessary.

Subphrenic abscess is a further complication which may be mentioned. Measurement almost invariably shows the affected side of the chest to be larger than the other, and if the heart has been originally drawn over and the signs of collapse of the lung persist or increase, any movement of the apex beat towards or beyond its original situation indicates the presence of a subphrenic abscess or an abscess in the upper part of the liver. The treatment, of course, is purely surgical. The outstanding feature of post-operative massive collapse is its relation to interference with the peritoneum. The length of operation and the kind of anæsthetic employed appear to have no effect of this sort.

Pneumonia and Bronchitis.

Lobar pneumonia following operation is uncommon, and its treatment in no way differs from that of the ordinary attack. I should like to urge the value of intravenous injection of strophanthin, gr. 1/100, in cases of failing heart with low blood pressure, always remembering that any severe grade of cyanosis must be relieved by preliminary venesection.

Bronchitis, which may progress to bronchopneumonia, is best relieved by injections of atropine, gr. 1/100, or tincture of belladonna in moderate doses, if the sputum is fluid and excessive; if it is scanty and viscid, antimony wine in 20 minim doses with 15 minims of tincture of stramonium is often very useful. A little bronchitis may be unavoidable after long administration of ether, and possibly contributes to any collapse that may be present, but it never seems to be the sole cause.

Geoffrey Eden, M.D. Camb., M.R.C.P. Lond.,
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Senior Physician to Out-patients, Birmingham
and Midland Hospital for Nervous Diseases.

Special Articles.

THE CENTENARY OF THE DISCOVERY OF BRIGHT'S DISEASE.

BY SIR WILLIAM HALE-WHITE, K.B.E., M.D. LOND.,
CONSULTING PHYSICIAN TO GUY'S HOSPITAL.

ON Oct. 12th, 1825, there was admitted into Guy's Hospital, under the care of Dr. Bright, one John King, an intemperate sailor, suffering from general œdema, scanty urine, and pain in the loins. He had hæmaturia but this passed away, and the urine, when clear, coagulated if heated; the pulse was hard. The sectio cadaveris revealed acute pericarditis, œdema of the lungs, pleural effusion, a large heart, and ascites. In Bright's own words:—

> "The kidneys were completely granulated throughout; externally the surface rough and uneven; internally all traces of natural organisation nearly gone, except in the tubal parts. . . . This is a well-marked example of a granulated condition of the kidneys connected with the secretion of a coagulable urine."

He inclines to the opinion that the "disease of the kidney was the first established." He considers that neither the disease of the lungs, pleura, nor heart was the primary condition, nor was there any disease of the liver to explain the ascites. He points out that pain in the loins is a symptom of renal disease, and that

> "the tendency to inflammatory affection in this man was a striking feature in his case and appears to me connected immediately with the condition of the kidneys."

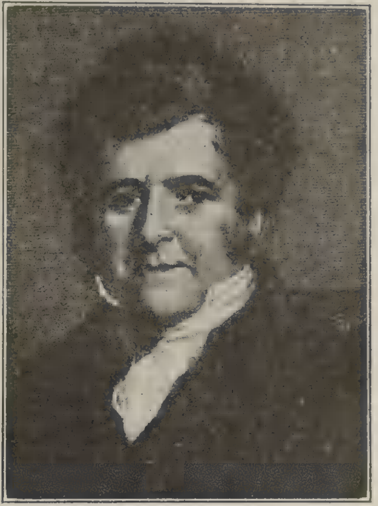
THE LANCET of Dec. 25th, 1858, writing of Bright's death, said:—

> "The sudden and unexpected demise of Dr. Bright has created a deep impression of grief and regret such as only a sense of irretrievable loss could occasion. In him all felt that the medical profession of England had lost one of the most original, observant, and philosophic minds. A man of peculiar independence of thought, of high morale, and untiring energy, he contributed more, perhaps, than any other to form the medical opinion of his day . . . By the singular devotion to pathological investigation which characterised his career, he was at once enabled to accomplish investigations which have immortalised his name."

It is fitting, therefore, that the centenary of the commencement of the investigations on the disease, bearing the name of one better known throughout the civilised world than any British physician since Harvey, should be signalised by some account of Richard Bright and his work.

Biographical Account.

He, the third son of Richard Bright the elder, of Ham Green, Somerset, was born at Bristol on Sept. 28th, 1789. In 1808 he began to study medicine at Edinburgh; in 1810 he accompanied Sir George Mackenzie to Iceland, and he wrote the botanical and zoological parts of Mackenzie's "Travels in Iceland" and drew some of the illustrations. On his return he entered at Guy's Hospital, and, in 1811, read a paper before the Geological Society. In September, 1812, he graduated M.D. at Edinburgh with a thesis on erysipelas, about which he had previously read a paper at the Medico-Chirurgical Society. He spent two terms at Peterhouse, Cambridge, returned to medicine in London, and in 1814 went on a tour through Holland, Belgium, Berlin, Vienna, Austria, and Hungary. He observed and studied everything he came across, medical or otherwise, and in 1818 published "Travels from Vienna through Lower Hungary, with some Remarks on the State of Vienna during the Congress in the Year 1814." The book, a well-printed quarto of over 700 pages, exemplifies Bright's wonderful power of observation and description, his wide reading, his accuracy, as shown by the tables, maps, and appendices, and his artistic ability, for it is illustrated by beautiful engravings from sketches by himself. In 1818 he again travelled in Germany, Italy, and France for nearly a year. In 1821 he became assistant physician to Guy's Hospital, in 1822 a Fellow of the Royal Society, in 1824 full physician to Guy's, and in 1832, although only a licentiate, he was with applause elected a Fellow of the Royal College of Physicians of London. He died on Dec. 16th, 1858; few of the millions that pass along Piccadilly know that there is a tablet to his memory in St. James's Church. He was a man of several interests, physician, pathologist, traveller, geologist, artist, writer, linguist, and an indefatigable worker, for many years spending six hours daily at the hospital. He was beloved by the students and his colleagues, who were invariably willing to aid him in his researches; he was always most careful to acknowledge help given, was ungrudging in his admiration of the work of others, and intensely proud of Guy's Hospital and its museum. But all this does not make a man extraordinary; but Bright was. It is impossible to place geniuses in order, but he would certainly be among the first five or six in our profession. To him was given marvellous power of observation, and his genius took him further even than brilliant seeing of facts, for he could correlate his observations and draw deductions from them.



Richd Bright

(*From Guy's Hospital Reports, January, 1921.*)

Discovery of Bright's Disease.

Bright's most remarkable publication was his renowned book "Reports of Medical Cases selected with a view of Illustrating the Symptoms and Cure of Diseases by a reference to Morbid Anatomy."[1] It is in two large volumes containing 65 beautifully coloured plates. The first appeared in 1827, the second in 1830. It shows his facility of insight, for it is entirely composed of original observations made at Guy's Hospital during the short six years he had been on the staff. In the preface he says:—

> "It is my wish in thus recording a number of cases, to render the labours of a large hospital more permanently useful, by bringing together such facts as seem to throw light upon each other. . . . To connect accurate and faithful observation after death with symptoms displayed during life, must be in some degree to forward the objects of our noble art. . . . The work will not be thoroughly completed, until every disease which influences the natural structure, or originates in its derangements, has been connected with the corresponding organic lesion."

The most celebrated part of this book is the first 126 pages of Vol. I. This section is entitled "Cases Illustrative of some of the Appearances Observable on the Examination of Diseases Terminating in Dropsical Effusion." Bright reminds us that a common cause of dropsy is venous obstruction, but adds that too little attention has been paid to the kidneys. Often albuminuria, which he detected by heating the urine in a spoon over a candle, is present as well as dropsy. Then the kidneys will be found diseased. He says :—

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[1] This is now a rare book. An abstract of it and of Bright's other writings was published in Guy's Hospital Reports, vol. lxxi., January and April, 1821.

> "I shall now detail a few cases . . . in which I had the opportunity of connecting the fact of the coagulation of the urine with the disorganised state of the kidneys."

Then follow the clinical notes of 23 cases to illustrate this point. Considerably more than half were fatal, a full account of the post-mortem examination is given, together with a series of coloured plates to show the diseased state of the kidneys. I have already mentioned the first, that of John King. Bright's next allusion to renal disease was in his second Goulstonian Lecture delivered in 1833. He then had

> "had great assistance from the intelligent and zealous coöperation of three of my young friends and pupils, Mr. Barlow, Mr. Tweedie, and Mr. Rees."

They examined the urine of 296 patients. Bright alludes to the enlargement of the heart, the serous effusions, the headache, the coma, and the cerebral hæmorrhage found in association with disease of the kidneys and reaches this conclusion :—

> "My conviction is complete as to the existence of some decided connexion between the three facts—anasarca, coagulable urine, and diseased function going on to diseased structure of the kidney."

His final and most extensive communication on the subject of nephritis appeared in *Guy's Hospital Reports* for 1836. It consists of two papers occupying 65 pages; the first is entitled "Cases and Observations Illustrative of Renal Disease accompanied with the Secretion of Albuminous Urine," the second, "Tabular View of the Morbid Appearances occurring in One Hundred Cases in Connexion with Albuminous Urine."

He gives the history of a sufferer from the form of renal disease under consideration thus: the patient may in the past have had scarlatina; early symptoms are polyuria, hæmaturia, and œdema of the face or ankles; if, at this stage, the urine is tested, albuminuria is found. Next he notes that the pulse is full and hard, the skin is pale and dry, the patient complains of headache, pain across the loins, vomiting, and disturbance of sleep owing to frequent micturition. A sense of lassitude, of weariness, and of depression steals over the bodily and mental frame. The blood is found to contain urea. The disease progresses, the œdema may increase, the lungs become œdematous, the headaches are more frequent, the stomach is deranged, the vision indistinct, and blindness may supervene. Finally, the patient dies from asphyxia due to œdema of the lungs, or of the glottis, or in coma or convulsions, or from acute pericarditis or peritonitis. Bright is not hopeful of treatment unless the case is seen in its early stages, but he advises diaphoretics, as antimonial powders, compound ipecacuanha powder, ammonium acetate, and warmth such as a hot bath; bleeding is of little use, cupping the nape of the neck will relieve the headache, leeches to the loins will assuage the pain there; acupuncture will diminish œdema, but we must be careful not to set up inflammation; the only diuretic that may be used is digitalis; elaterium is a suitable purge; milk is one of the best aliments; every precaution must be taken to avoid chill, flannel should be worn, and a warm climate is desirable. I have given a mere abstract of what he wrote, but even that is enough to show that Bright's description is a masterly exposition of the symptoms and treatment of what was then a new disease. The post-mortem appearances of the kidneys are carefully described; it is noted that acute pleurisy, pericarditis, and peritonitis may be found, or the pleural, pericardial, and peritoneal cavities may contain serous fluid; the heart may be hypertrophied, but otherwise healthy; œdema and bronchitis of the lungs are common; sometimes the intestines have been irritated; occasionally they are ulcerated and cerebral hæmorrhage is observed in some instances. Bright, with the inspiration of genius, arrives at the conclusion that the primary cause for all these symptoms and post-mortem appearances is disease of the kidneys.

Assuredly this is one of the most astonishing series of papers in medical literature. A disease, which presents symptoms of derangement of almost every organ in the body, is unerringly ascribed to the kidney. We are shown how to diagnose it. The description of its causes, its symptoms, its treatment, and its post-mortem appearances is so complete and accurate that after nearly a century no error has been detected and, if we except a few facts that have been gleaned by instruments Bright did not possess, nothing of importance has been added.

His enthusiasm for the study of renal diseases continued. With the hearty coöperation of his colleagues, two wards were, from May to October, 1842, set apart for renal cases only, which were all under his care. A small laboratory "was fitted up and decorated entirely to our purpose." This, Bright says, is—

> "the first experiment which, as far as I know, has yet been made in this country to turn the ample resources of a hospital to the investigation of a particular disease by bringing patients labouring under it into one ward properly arranged for observation."

The results of this experiment were published, by Barlow and Rees, in *Guy's Hospital Reports* for 1843, and they confirmed the previous investigations.

Other Medical Observations.

Bright's work on renal disease has attracted so much attention that too little has been paid to his other observations, many of which were original. His power of seeing was extraordinary; little escaped him, he never saw what was not there, not a single one of his observations has been shown to be incorrect; his accuracy and truthfulness are wonderful; no preconceived idea ever tints his descriptions; his industry was unflagging; he willingly goes into the country for the sake of a post-mortem examination. He could write well, it is a pleasure to read him; any disease he describes stands out with all its features clear, and the account he gives is true to-day.

The second volume of his "Reports of Medical Cases," with its 724 pages and 40 artistically coloured plates, is concerned with the nervous system. Bright dislikes the use of the word functional, for it is used to cloak ignorance and it retards investigation. He describes the meningitis due to disease of the ear and nose, and records that the tuberculous variety may be excited by a blow; he tells of patients, with tumours of the brain, who had spasmodic extension of the limbs and in whom the spinal cord was "remarkably firm throughout, almost like cartilage"; this, he thinks, was probably the cause of the spasticity, and to him, therefore, belongs the discovery of the morbid anatomy of secondary degeneration of the cord and spastic paraplegia. More than 40 examples of cerebral hæmorrhage are recorded, both clinically and autopsically, and their relation to renal disease is emphasised. In the section on epilepsy, epileptic mania and somnambulism are depicted; Bright was insistent that certain epileptic seizures, or, as we should now call them, attacks of Jacksonian epilepsy, are due to organic disease damaging the surface of the brain; and further, that in these and in other cases of nervous disease, study of the symptoms will enable us to foretell the position of the causative lesion. In illustration of this he tells us that he saw a man suffering from fits on the right side; because of this he was of opinion that there was disease on the surface of the left brain, which proved to be correct. Aphasia is singularly well described. He was, indeed, the pioneer in the doctrine of cerebral localisation.

He did much to make known the association between chorea and rheumatic fever. Probably he was the first to tell us that a mitral murmur and also pericarditis may accompany chorea.

Bright published a series of papers in *Guy's Hospital Reports* on Abdominal Tumours and these were reprinted as a separate book; 117 cases are reported and form classical clinical lectures. How much of the matter in them is original we cannot say, for we do not know the exact state of knowledge at the time; but with regard to 15 cases of abdominal hydatid disease we have the testimony of Barlow that—

> " It is but due to the memory of Bright to state . . . that the description of acephalocyst hydatids is altogether original, and certainly an anticipation of similar observations which have since been published in Germany."

In his paper on " Cases and Observations connected with Diseases of the Pancreas and Duodenum," Bright was the first to describe—and he did it admirably—the stools which we now know to be characteristic of disease of the pancreas, and he stated that they indicated disease of that organ. He was aware that glycosuria might occur with pancreatic disease. Another paper, " Observations on Jaundice," contains an account of jaundice and its causes. We are told how, in alcoholic cirrhosis, the liver first enlarges and then contracts, and we have the first description of acute yellow atrophy of the liver, for although Bright did not name the disorder, he accurately described its clinical symptoms and post-mortem appearances. A paper on Chronic Peritonitis contains what is probably the earliest description of chronic proliferative peritonitis; the thickened membrane, the bands, the shortened mesentery are all here.

To Bright must be given the credit of being the first to depict Addison's disease. He did not connect the disease of the adrenals with the symptoms, but he gives a life-like account of them and records that the suprarenals were greatly enlarged from a deposit of scrofulous matter. The specimen is still in the museum at Guy's Hospital.

In London, in 1839, was published Vol. I. of " Elements of the Practice of Medicine," by Richard Bright, M.D., and Thomas Addison, M.D. The second volume never appeared, and the first is a rarity; therefore, it is not generally known that it contains the earliest accurate account of the causes, symptoms, course, and post-mortem appearances of appendicitis. It is too long to quote, but everyone interested should read it; Kelly does not exaggerate when in mentioning it he says, " descriptions so clear and well presented that they could not be surpassed to-day."

Conclusion.

In this outline of Richard Bright and his work I have been compelled, for want of space, to omit much; for example, his description of phthisis, his giving of oxygen for respiratory distress, his account of a case of heart-block, and what is probably the first delineation of the broncho-pneumonia and pulmonary collapse seen in whooping-cough; but I trust I have shown that this article, written to commemorate a centenary, is justified.

A CARDIFF CONVALESCENT HOME.—Cardiff Royal Infirmary has long been in need of a convalescent home, and the lack has now been supplied by Sir William Edgar Nicholls, who has presented the infirmary with a country house known as Ty To Maen at St. Mellons, near the city, with 25 acres. The house, which is in beautiful country overlooking the Bristol Channel, will provide between 60 and 65 beds.

WELSH MENTAL DEFICIENTS.—A conference of representatives of the six counties of North Wales has recommended the preparation of a joint scheme for a new home for mental deficients. The North Wales Mental Hospital at Denbigh, which is supported by the counties of Denbigh, Flint, Carnarvon, Anglesey, and Merioneth, has long been overcrowded. Its nominal capacity is 1000 patients, but it sometimes contains 1200.

AN INSANITARY IRISH HOSPITAL.—Donegal County Council is borrowing £7000 for urgent work at the Donegal County Hospital, Lifford. It was stated at the meeting of the council that " there was danger of an attack of enteric fever in the place if some remedy were not forthcoming," and that " anyone going near the place could not help observing that there was something wrong owing to the pungent smell."

PUBLIC HEALTH ADMINISTRATION.

ADMINISTRATIVE MACHINERY IN EUROPEAN COUNTRIES.*

(*Continued from p. 719.*)

VI. HUNGARY.

HUNGARY has been reduced to an area of 36,000 square miles containing a population of about eight millions (206 persons per square mile). Various forms of government have been tried since the war; at present the country is ruled by a single chamber National Assembly based on universal suffrage and acting under a Governor who has royal rights but no legislative veto. For administrative purposes Hungary is divided into counties and each of these is in charge of a Prefect (Fôispán), who is directly responsible to the Government. Each county elects a Municipal Committee, whose General Assembly may have several hundred members. The central authority of the Prefect dovetails into the autonomy of this county parliament, and there is between them an important Administrative Committee, mainly composed of high officials, under the presidency of the Prefect. The representative of the county as an autonomous unit is the Vice-Prefect (Alispán). Towns with a population of more than 50,000 (urban municipalities) correspond to counties and in these the burgomaster is the Alispán. Each county has from three to six districts, the ultimate unit being the commune, which has its own Mayor with Administrative and Representative Councils like those of the county in miniature. Small communes are sometimes grouped into cantons, and towns of over 7000 rank as districts politically.

Health Administration.

The foundation of the present system was laid in 1876 by a sanitary law designed to detect and punish nuisances; but the Ministry of Health and Social Welfare was only established in 1918. The Minister has very wide powers, and is assisted by under secretaries who deal with public health and social welfare respectively and superintend the 14 departments. Each of these is in charge of a Ministerial Councillor and they cover all the branches of health and welfare, including, for example, sanitary administration, social diseases, hygiene, health insurance, and communicable diseases. To advise the Ministry upon all special questions there is a non-executive National Public Health Council representing every branch of medicine, and there is also a Board of Forensic Medicine which assists the Ministry of Justice and advises on disciplinary or disputed points within the medical profession.

Counties (urban or rural municipalities).—The Municipal Committee (General Assembly) is responsible for organising small communes into sanitary cantons, draining marshes, the issue of emergency health regulations, and the revaccination of adults in epidemics. It also examines the credentials of practitioners and midwives, ensures that every commune has a midwife and regulates her fees, and authorises private practice by communal medical officers or makes allowances to them if their income is inadequate. Appeals against the Assembly's decisions are addressed to the Ministry. Under the law the principal lay authorities must be guided as a general rule by expert opinion. The Prefect therefore appoints, subject to the approval of the Ministry, a Chief Municipal Medical Officer in each county, and this officer and his medical subordinates form the nucleus of a Municipal Health Committee which advises and makes suggestions. The Chief Medical Officer is a member of the Prefect's Administrative Committee and acts as expert rapporteur to this and to the General Assembly. Apart from giving advice he supervises the whole health personnel and medical institutions of his county, conducts sanitary inspections, licenses doctors and midwives, undertakes investigations in police cases, and publishes statistical data. He is subject to the Prefect but in direct contact with the Ministry, to which he reports quarterly. He must visit every village at least once a year and he takes action in epidemics. Administrative power, however, rests with the Alispán (Vice-Prefect or burgomaster) on whom the actual responsibility lies for the enforcement of health regulations. It is his duty to see that dwellings are not overcrowded, that conditions in medical institutions are satisfactory, that epidemics are being met, and that sanitary inspection is made properly.

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* Based on a Series of Reports on National Health Organisation to the Health Section of the League of Nations. Obtainable in Great Britain from Constable and Co.

Note.—Budapest has modified health organisation.

Districts.—The lay Chief District Officer is responsible, like the Alispán, for all public health matters —e.g., the enforcement of sanitary regulations including those applying to food, the care of the indigent sick and of babies, and the ordering of autopsies. The District Medical Officer, appointed for life by the Prefect, reports on any neglect of regulations, inspects buildings, schools, medical establishments, examines food, supervises the treatment of the indigent sick and the certification of death, and conducts medico-legal autopsies. He reports quarterly to the Alispán. (In cities ranking as counties the District Medical Officer is appointed by the General Assembly, which also delegates many of his duties to other officers.)

Communes.—Health administration is the same in communes, cantons, and in towns politically ranking as districts. The chief official is the Mayor, who heads the Communal (Administrative) Council and presides over the Representative (Advisory) Council. He is responsible for drinking-water, cemeteries, inspection of food, and the care of the disabled and children. The commune pays half the expenses incurred in preventing or treating infectious disease, including hospitals, the rest being defrayed by the State. The Mayor must consult the Communal (or Town) Medical Officer, who is assisted by a Health Committee consisting of doctors, veterinary surgeons, pharmacists, ministers, &c. This Committee advises on the appointment of medical officers, hospital surgeons and midwives, and on all health matters, and can appeal to the District Medical Officer. Every commune or canton of over 5000 inhabitants has one or more medical officer. He is allowed to practise privately and advises all the authorities. He treats the indigent without fee, attends maternity cases, vaccinates, certifies deaths, supervises midwives, performs autopsies, and reports to the District Medical Officer.

Hospitals, Training and Registration.

State hospitals are under direct supervision by the Ministry. The doctors are appointed by competitive examination and the senior officers rank as civil servants. Public hospitals must conform to regulations and they are subject to the Municipal Administrative or Communal Committees. The staff is appointed, after examinations, by the Prefect in counties and by the Vice-Prefect in communes. There are also hospitals ranking as Public Utility Establishments, which are semi-private institutions recognised and subsidised by the Ministry in return for an obligation to receive certain kinds of patient. Finally, there are the private hospitals, and these are under municipal supervision.

Insurance.—All workers earning less than a fixed sum who are subject to the Industrial Law are compelled to insure themselves against sickness and accident. There is also a scheme covering civil servants. Strict laws govern *medical practice ;* there is a six months' course in public health but no public health school in Hungary ; health officers are generally required to have passed an examination and to have had two years of hospital experience. A diploma has also been required of *midwives* since 1921, and a ten months' course is needed before this can be taken.

Statistics are based on the reports of the officers mentioned. Registered medical practitioners, persons trained for the purpose, or failing them, the communal authorities, are entitled to certify death. Burial must take place within 60 hours, and autopsies may be conducted whenever desirable in the public interest.

VII. THE KINGDOM OF THE SERBS, CROATS, AND SLOVENES.

Jugo-Slavia was formed in 1918 from Serbia, Montenegro, and the old Austrian provinces of Croatia, Slavonia, Voyvodina, Bosnia-Herzogovina, Dalmatia, and Slovenia. The area is 87,000 square miles and there are over 12 million inhabitants (137 persons per square mile).

Health Organisation.

The Ministry of Health is the central health authority, but has much in common with the Ministry for Social Affairs, which deals with housing, with the protection of children and the infirm, and with social and workers' insurance. The Health Ministry, which has the advisory assistance of a Permanent Epidemics Commission and a Supreme Health Board, is divided into departments dealing with Administration, Health, and the Public Health Services. The Institute for Social Medicine at Belgrade is a technical branch of the Ministry which is collecting information on national and foreign health standards and methods, and is engaged in propaganda and the preparation of schemes and reforms.

The Health Department.—Until 1923 this was independent of the general administration. There were ten sanitary inspectors and there were regional medical officers in charge of each province, district, and county, who had full authority and could inflict fines for infringement of sanitary regulations. Their powers have been curtailed, and they are now responsible to the administrative (political) authorities of their regions, though they retain the right of appeal to the Health Minister.

The Health Services are autonomous technical organisations, which deal with epidemics, malaria, venereal diseases, &c. Their work is regulated by the Ministry through the new Sanitary Institute at Belgrade, which will contain central laboratories with facilities for bacteriology, training of medical officers, and research. The Institute will control the otherwise independent activities of the large provincial institutes for the study of special diseases and the whole body of local epidemiological institutes and stations. Many bacteriological stations have been established, either permanently or in the field, and these are self-contained sanitary units with a bacteriologist, nurses, and disinfecting apparatus. There are also some motor laboratories and two ambulance trains. The service at present has 150 medical officers of its own and is limited to those who have been specially trained abroad. The number is to be increased, and during epidemics other doctors are temporarily coöpted.

Training, Propaganda, and Statistics.

The kingdom has three schools of medicine. After five years' training students are attached for a year either to a hospital or to a health institution, and in this way specialism in hygiene begins at once. The course for nurses lasts two and a half years, and they, too, are attached to one or other kind of institution. *Propaganda* is regarded by the authorities as one of the most essential parts of the health organisation, and is carried on by books, pamphlets, lectures, plays, and the cinema. The Ministry of Health subsidises a paper advocating temperance and publishes an official journal. The method of collection of *statistical information* is as yet incoördinate and faulty. The duty devolves on the Ministry for Social Affairs, but centralisation is incomplete and no reports have been published for ten years. The data are mainly furnished by the priests—Orthodox, Catholic, or Moslem—who are supposed to fill in statistical forms for all births, marriages, and deaths. Helpful instructions are issued for the use of persons who have to state the cause of death in the absence of a doctor. Still-born children are those who "have not breathed and who died before birth." Registrable information is forwarded monthly to Belgrade by the priests or the District Health Officers.

VIII. Czecho-Slovakia.

Czecho-Slovakia is a democratic Republic under an elected president, and is made up of territory from the old kingdoms of Bohemia and Hungary and from a part of Prussian Silesia. It covers 54,000 square miles, and has a population of 13,600,000 (244 persons per square mile). Under the Empire the Austrian provinces of Bohemia, Moravia, and Silesia had a measure of autonomy, whilst Slovakia and Ruthenia were appanages of the Hungarian crown. The Czecho-Slovakian Government is trying to establish a uniform administration, under which the country is divided into counties (Zupàs), with an average population of 600,000, and these are subdivided into districts of 60,000. County and District Commissioners represent the Government in their areas, and there are county councils and district committees which carry on administration under their care. For financial reasons, however, this system is as yet only in force in Slovakia. Ruthenia remains a semi-independent territory governed by a local Diet, and the other provinces retain much of their previous administrative machinery, which combined with difficulty and friction the authorities of the provincial Diet and the Imperial Government.

Health Organisation.

The Ministry of Public Health and Physical Training was established in 1918, and has legal, administrative, financial, and recording divisions. The sections devoted to public health are in charge of heads of sections, or lower officials called Ministerial Councillors, and are subdivided into departments. There is an under secretary who represents the Minister, and a Central Committee which organises the work of the whole under the Minister's presidency. A State Institute of Hygiene is to be formed from the existing institutes of hygiene, serology, pharmacy, bacteriology, chemistry, and hydrology, and a large grant by the Rockefeller Foundation makes it possible to combine the practical laboratory services with hospital work and the training of medical officers of health and sanitary personnel. The Ministry of Social Welfare deals with child welfare, sickness insurance, the care of disabled soldiers, housing, and industrial inspection. It acts through committees established throughout the country according to provinces and nationality. The National Council of Social Hygiene is intended to centralise voluntary health and social work, and is a federation of benevolent organisations which includes those interested in tuberculosis, venereal disease, and maternity and infant welfare. The most powerful voluntary organisation in Czecho-Slovakia is the Red Cross, which organises campaigns against epidemics, establishes hospitals and dispensaries, and arranges courses for public health and social workers.

Local Administration.—The reorganisation of the country into counties will eventually produce in the health services a continuous chain leading from the Rural Medical Officer to the Minister of Health. But the change is far from complete and the remains of the old systems still exist with modifications. Under the Empire there were two distinct organisations, and dual control was evident in its results. First of all, there was the Imperial Service, which was represented in the province by a Provincial Health Commissioner and in the district (60,000 persons) by a District Health Officer. This administration was supposed to supervise health institutions and pharmacies, control the spread of infectious disease, arrange for vaccination, order post-mortem examinations when necessary, and perform other like functions. So much for that; but the Provincial Diet or parliament—an historical relic and a concession to nationalism—also had its health organisation. Chiefly this was concerned with the upkeep of hospitals, but it also superintended the local medical officers. The country was (and is) divided into small areas in charge of Rural Medical Officers, and towns of more than 6000 had one or more Urban Medical Officers. These officials were paid by the communes, on which fell the duty of applying health regulations, collecting particulars of cripples and the disabled, treating the indigent sick, keeping up cemeteries, and supervising infectious diseases. Their officers were also frequently required by the Imperial Service to furnish reports and make post-mortems; but they were quite independent of the State officials, who were far better paid and trained. Both were permitted to practise privately; but the local officers were often practically dependent on what they could earn in this way; which circumstances, and the fact that the district officers were looked on as representing the Imperial Government, led to disharmony and a total lack of coöperation. At present there are in Czecho-Slovakian service 334 medical officers in what was formerly the Imperial Service and about 2000 in rural and urban employment. The new constitution will combine all these in one State Service, but financially this is at present impossible on a permanent basis. To make the local officers subject to the district officers was imperative, and this has been done by enrolling all the local officers as State servants on a temporary contract with increased salary.

Hospitals and Training.

Public hospitals are maintained by the State, province, county, district, or town. Slovakia was the only province in which there were any State hospitals before the Republic was formed. Nationalisation of all hospitals has been abandoned on grounds of expense. There are two beds for every 1000 inhabitants; but unfortunately the distribution is most uneven, and in some districts more are urgently needed. Most of the so-called infirmaries are really poor-houses without medical amenities. Besides the true public hospitals there are institutions receiving that status in return for certain obligations, and there are, of course, private hospitals. In Czecho-Slovakia there are 1506 beds for pre-tuberculous children, 3264 for curable tuberculosis, and 423 for incurable tuberculosis, and in Bohemia alone there are 7108 beds for the insane (more than 1 per 1000 inhabitants). Health centres have been set up in the larger towns for the treatment of social diseases; disinfection stations exist on the frontiers, and there is an observation station in Bohemia to which people suspected of infectious disease are sent. Regular school doctors were appointed in Prague as early as 1904, and there are now 14. Their presence in other towns depends on local initiative; their salaries are paid by the provinces or districts except in the few State schools; in these they are paid by the Ministry of Health, which is the authority in school health matters.

Medical students are required to study for five and a half years, and State medical officers have been obliged to pass an examination before appointment. Two years' preliminary practice was required, and a preliminary university course of three months was usual; but now a regular course on public health at the State Institute of Hygiene is being instituted, and local medical officers also will have to pass the examination. There are schools of nursing, but to possess the diploma is very rare, and general hospital nursing is unsatisfactory. District nursing is almost unknown, and there is no school of public health nursing. Midwives must obtain a diploma before practising. The course lasts six months, and probably 95 per cent. of all births in Czecho-Slovakia are attended by midwives, though there are too few in the country districts. Their general education is very weak. There are very few trained disinfectors, and their duties are usually undertaken by night watchmen or policemen; but a school has been started in Prague, and short courses are occasionally given as demand arises.

POST-GRADUATE LECTURES AT ST. MARY'S HOSPITAL.

The course of post-graduate lectures given over last week-end at St. Mary's Hospital was as successful as those held during the past two years, and had a very cordial reception. Eleven lectures were delivered between 11 A.M. on Saturday and 5 P.M. on Monday; they were freely open to all practitioners, and the fact that over 160 attended part or all of the course should encourage its organisers and provoke imitation of their work.

Mr. C. W. G. Bryan gave the first lecture on the management of

Common Forms of Urinary Obstruction.

Congenital narrowing of the urethral meatus is, he considers, a frequent cause of bouts of obstruction in boys and of continued intractable gleet in men, yet it is often overlooked. In retention due to stricture in adults, any given case may later need anterior urethrotomy, and disturbance by bougies must be minimal. If decongestive measures fail a 2 per cent. novocaine solution should be injected, and a No. 5 French gum elastic bougie passed. If this succeeds the stricture is dilated by four sizes; if it fails, a filiform catheter is inserted and left for 24 hours. A silver bougie is never desirable, and if the stricture is impassable the bladder should be aspirated with the smallest possible trocar, and, if need be, aspirated again after 24 hours. Persistence of retention after this indicates anterior urethrotomy; and infection, of course, forbids aspiration from the first. Strictures must be gradually stretched but never ruptured. Dilatation should not be done more than once or twice a week; an increase of two to three sizes at a session is enough; there should never be bleeding, and it is wrong to go on till there is pain or difficulty. After describing a method of permanent watertight drainage of the bladder by a special catheter inserted through a cannula, Mr. Bryan ended with a plea for cystoscopy and patience in treating ureteric calculi.

The Differential Diagnosis of Gall-stones.

Mr. S. Maynard Smith said that gall-stones must be treated before those complications arise which make them easy to diagnose. After dealing with the main complications he fully described the clinical features of the disease near its onset, emphasising the vague dyspeptic symptoms lacking periodicity and punctuality; the sensations of nausea, giddiness, and chill often noticed; the relation of discomfort to fatty foods, and the absence of relief by alkalies. Visceroptosis is more confusing than ulcers. In gall-stones there may be short acute exacerbations, unrelated to food, when the vague epigastric discomfort turns to right hypochondriac pain with transient subcostal tenderness; lying down brings no relief; a day of standing brings no exacerbation; and bile may be found in the urine. Chronic appendicitis gives tenderness over McBurney's point, not to be confused with diffuse tenderness over the lower rectus muscle due to a distended cæcum. In conclusion, Mr. Maynard Smith discussed, with illustrations, the value of X rays, and mentioned the detection of bilirubin in the blood, the examination of bile withdrawn through a duodenal tube, the estimation of blood cholesterol, and the intravenous injection of calcium tetrabromphenolphthalein to display the gall-bladder with X rays.

Speaking on

Hæmorrhagic Ovarian Cysts,

a common cause of pelvic pain, Mr. T. G. Stevens said that these have been variously called hæmorrhagic corpus luteum cysts, tarry or chocolate cysts, and apoplectic ovary. They are usually found in sterile women of 25–40, and give rise to severe increasing dysmenorrhœa—otherwise rare after the age of 19—coming on several days before the flow and lasting for two days; rectal pressure and pain due to adhesions; dyspareunia, and, in half the cases, menorrhagia. Swellings of moderate size on either side of a partly fixed uterus to which they are somewhat attached, in conjunction with these symptoms and in the absence of any history of pelvic peritonitis, are probably hæmorrhagic cysts. Inflammatory tubal swellings never have the same insidious onset. The condition has often been wrongly diagnosed and disregarded, but it is very serious; the patients become chronic invalids and suffer much; the only satisfactory cure is operative, and both ovaries generally need removal. Until recently the pathology has been obscure. In every cyst wall, said Mr. Stevens, a small area of endometrial tissue is found, and the cyst is formed by the menstruation of this tissue, the pressure of blood producing the severe pain. He discussed the possible sources of this "endometrioma," and its relation to adenomyomata and endometriomata found in other positions. He is satisfied that it comes from endometrial tissue carried up through the Fallopian tubes at menstruation and implanted in the ovary, as is proved, he considers, by ovarian sections which have been prepared.

Dr. C. M. Wilson followed with a lecture on

The Patient's Point of View in Treatment.

He began with a plea that where there is a doubt the patient's opinion should have the benefit of it rather than the doctor's prejudice. In uncertain duodenal ulcer medical treatment should be tried. So-called functional disease probably rests on an organic basis, and it is useless to tell a chronic nervous dyspeptic that he is a bundle of nerves; he must have careful examinations and explanations. Exophthalmic goitre is a common disease badly mishandled. Every case is a potential case of heart failure, and must be moved at once into better conditions. Surgical treatment has a mortality of 5–10 per cent., and X rays must always be given a trial first; to operate when the basal metabolic rate is rising is disastrous, and the time must be carefully chosen. Diabetes in a child demands elaborate institutional treatment; in a young adult it demands at least three weeks' careful training and investigation in hospital; in the middle-aged it usually needs a modified diet, and, if this is neglected, a warning about eye troubles; in the aged only complications have to be treated. Briefly, insulin is only indicated in children, in coma, in gangrene, and sometimes when the diet fails. With heart disease in pregnancy labour is usually successful, but serious degeneration follows.

On Sunday morning Mr. Zachary Cope spoke on

Minor Surgery in General Practice.

After referring to the dangers of chloroform and cocaine he dealt briefly with the treatment of various common conditions. No operation should be regarded as unimportant; care is always needed. Breast tumours are outside the province of minor surgery altogether; they must always be treated as malignant till proved benign, and nothing less than the whole section of breast containing them can safely be removed for fear of diffusing cancer cells. In abscesses, contrary to belief, redness and fluctuation are by no means always present. Ischio-rectal abscesses must be diagnosed early to avoid fistulæ; peri-anal pain demands rectal examination; the removal of a circular piece of skin at the centre of the usual cruciform incision gives good drainage. As a guide to infections of the hand Kanavel's book is invaluable. Needles should be localised if possible by seeking for them under X rays with a hypodermic needle containing novocaine. Brilliant green (a 5 per cent. aqueous solution) is useful in erysipelas, and acriflavine is a good general antiseptic. Mr. Cope ended his lecture with ten minor surgical commandments, which prohibit the use of cocaine for small tumours under the skin, of chloroform after adrenalin, and of strapping applied to infants' skin. They prescribe microscopy for all small tumours, radiography for all sprains, and Hilton's method for opening all deep abscesses.

Prof. B. J. Collingwood opened a lecture on

Some Applications of Physiology in Practice

by remarking that it is untrue to say that laboratory work is divorced from clinical work; they are not yet even engaged. His address dealt with the reaction of the blood, and he gave a lucid explanation of the terminology used. The general metabolism makes for acidity, but a constant reaction is vital to the body and is maintained by the alkaline reserve; when this is reduced the body normally excretes acid ions by the lungs. The CO_2 in alveolar air is an index of the acid content of the blood and can be easily and quickly determined. Much diminution of alveolar CO_2 below the normal 5 per cent. therefore means that the alkaline reserve is reduced, since the acid content of the blood varies as the alkaline reserve in order to keep the reaction constant, and it is thus easy to discover and measure acidosis or alkalosis. The second way of getting rid of acid is by the kidney. The urine is a caricature of the blood—it exaggerates any fault—and a slight rise in hydrogen-ion concentration in the blood produces an acid urine. A third defence against acidosis is the combination of acid radicles with ammonia by which, if necessary, ammonium salts are excreted instead of urea.

On Monday morning Mr. Warren Low read a paper on

Malignant Disease of the Colon.

Clinically, he said, it may simulate a dozen diseases. As a rule it is of low malignancy, but there are striking exceptions, and it often occurs earlier in life than other forms. After describing the annular and cauliflower types of growth and showing specimens, Mr. Warren Low discussed ulceration in the distended bowel above the lesion and the types of obstruction which developed. The onset of constipation in a patient over 40 always demands examination; cæcal cancer often produces colicky pain after meals; in obstruction there is often visible peristalsis and a local or general distension. In growths on the left side constipation is seldom absent; on the right side diarrhœa is common, and ten days' intractable diarrhœa in an adult should stimulate investigation; neurasthenic dyspepsia or ulcerative colitis are commonly diagnosed mistakenly. A rectal examination is essential; X rays are rather disappointing at present; the diagnosis from diverticulitis may be impossible, and laparotomy should be done oftener. The vaunted value of blind cæcostomy is illusory in practice, and it is to be reserved for desperate cases and those in which the diagnosis is certain.

Overlooked Causes of Fever in Children.

Prof. Langmead said that in protracted fever, where the child is obviously very ill, one must think of pneumonia, generalised tuberculosis, *B. coli* infection, malignant endocarditis, and typhoid. Too much is laid at the door of worms and dentition, but they are also possible causes. The only absolute sign of generalised tuberculosis is a choroidal tubercle. *B. coli* infection is too often overlooked, as for some reason babies' urine is not examined; offensive urine and rigors may give a clue, and the condition may be a cystitis, pyelitis, or even a fatal pyelonephritis. Though cases of congenital heart occasionally have bouts of fever, they frequently end with malignant endocarditis. Where unexplained fever is the outstanding feature of a case, constipation or mild colitis due to diet—perhaps excess of bananas—is often responsible. Bilious attacks without vomiting, which otherwise resemble bouts of cyclical vomiting, are not uncommon, and food idiopathy is an occasional cause of fever. No throat should ever be forgotten, and otitis media is sometimes exceedingly insidious. Obscure fever also occurs in dental caries, chronic appendicitis, cryptic glandular tuberculosis, and in nervous children whose mental or physical equilibrium has been disturbed. In stomatitis the buccal temperature is sometimes raised spuriously above that of the rectum. Speaking on

Clinical Types in Gynæcology,

Mr. Aleck Bourne said that sterility is often due to fine adhesions or membranes closing the ostia of the Fallopian tubes. In women complaining of sterility who show no constitutional or pelvic abnormality he recommends dilatation of the tubes by gas, to find out whether the ostia are patent. The apparatus is simple. Under an anæsthetic the cervix is slightly dilated and gas is passed into the uterus; a constant low pressure and bubbling sounds on auscultation show that the gas is entering the peritoneal cavity. This procedure is inapplicable if there is sepsis or tubal inflammation and in the week preceding menstruation when congestion occludes the ostia; but apart from constitutional disease it is otherwise safe and rational, and American statistics suggest that it is therapeutic as well as diagnostic. In healthy sterile women with closed ostia a plastic operation is worth trying. Describing the symptoms which may coexist with retroverted uterus, Mr. Bourne said that, practically speaking, its correction is only needed in the type of woman with dyspareunia, a tender "fixed" uterus, and prolapsed ovaries, in marked prolapse, and in some cases of sterility and repeated abortions. He ended by mentioning the value of X rays applied to the thyroid in "functional menorrhagia," and the possibilities of intra-uterine radium in this condition.

On Monday afternoon Sir William Willcox lectured on

Chronic Toxæmia,

its recognition and treatment. He regards latent infection as the most important known ætiological factor in disease. The relation of toxæmia to diabetes, exophthalmic goitre, appendicitis, gastric ulcer, arthritis, and many other conditions is generally recognised. Its symptoms include wasting, debility, neurasthenia, and a muddy complexion; the last is very suggestive. The irregular pyrexia may suggest typhoid, and amongst many results of toxæmia are thrombosis, hæmorrhages, myocarditis, and endocarditis. The gradual rise of blood pressure throughout life is probably a result of toxæmia which might be avoided, and it has been suggested that 75 per cent. of mental disease is toxæmic in origin. Teeth, tonsils, antra, bowel, and urogenital system—all require investigation in doubtful cases. In intestinal infection there is often an atonic colon, a palpable cæcum, and indicanuria. Colon lavage may yield good material for examination, and is a simple effective form of treatment which any intelligent nurse can carry out. Vaccines should only be given after removing the focus, if that is possible, and need caution in diseases like gout in which resistance to bacteria is poor. Vaccine dosage, indeed, is generally too large.

Cancer of the Breast.

Mr. Duncan Fitzwilliams said that it may be many years before Barnard's findings can be accepted as proved. To establish that cancer is bacterial would not necessarily give us a cure, and the only certainty about the disease is that it is non-infective. Breast tumours in women over 35 are malignant in 80 per cent. of cases. The remaining 20 per cent. are made up by abscess, which is usually puerperal and therefore rare at this age; adenoma, which commonly occurs in younger women; lipoma, syphilis, tuberculosis, and duct papilloma. This last often gives a blood-stained discharge and it is impossible to say in any given case whether it is malignant or not. The hope of cure in breast carcinoma depends on really early diagnosis. To wait for pain, involvement of the skin, nipple retraction, or axillary swellings is futile. If a woman complains of uneasiness in the breast and anything abnormal can be felt, there is only one proper course—microscopy. There is no other way of diagnosis at the time when the patient will have a 60–80 per cent. chance of cure.

A demonstration followed this lecture and ended the post-graduate course.

IMPERIAL SOCIAL HYGIENE CONGRESS,

Wembley, Oct. 5th–7th.

Under the auspices of the British Social Hygiene Council a very largely attended Imperial Social Hygiene Congress took place in Conference Hall No. 3 at the British Empire Exhibition at Wembley on Oct. 5th, 6th, and 7th. The chair was occupied by Sir Auckland Geddes, the President of the Council, who extended a cordial welcome to the various delegates, many of them hailing from distant Colonies and Dependencies.

Opening by the Secretary for the Colonies.

Mr. L. S. Amery, M.P., Secretary of State for the Colonies, formally opened the proceedings in a speech in which he reviewed the general question of venereal diseases in various parts of the Empire. He said that those who embarked upon this work could well be satisfied by the obvious signs of the increasing interest and recognition of the importance of the subject from the public health standpoint which had been manifested both by the general population and in official quarters. In Africa, especially, the wrestling with the problem had got to be carried through by the people themselves, and it must be remembered that the African native was not, either in physique or intelligence, capable of coping with the great task which was to be attacked there, hence the great requirement was the enhanced development of the people, especially on the physical side. The foundation of African disease was not one which was inherent in climate so much as inherent in man ; it was due to neglect and was therefore eradicable. The increasing importance of the part which medicine had to play in the administration of the tropics was patent to all at headquarters who could take a general view ; and what applied to Africa was also applicable, in smaller measure, to other parts of the Empire. The Colonial Office was now giving greater attention to the suggestions of the Advisory Council, and had increased the grant to the body responsible for this Congress. Under the auspices of Mr. Baldwin and Lord Balfour the British Government had created a new policy in the form of the Committee of Civil Research, which would do for the scientific aspect of our national life what the Committee of Imperial Defence did 20 years ago for the external security of our national life. He emphasised the fact that the administration of the Empire as a whole must be based upon a sound health policy. The particular diseases with which the present Congress was concerned were among the most serious and yet most hopeful to which any body of workers or reformers could devote themselves ; the wastage and destruction of human life for which they were answerable was being more and more realised, and with the march of scientific research in regard to them they could be eradicated given a sufficiently strong public opinion and a determination to combat them. The chief barriers in the past had been ignorance, indifference, and fatalism, creating a very hopeless public outlook. Concealment, deliberate or semi-conscious, on the part of the public on this matter had not only affected legislative attempts to deal with it, but had even influenced the amount of study which had been devoted to it by the medical profession. Very great progress in the matter had recently been made, however, and that largely in consequence of treating the disease frankly as a disease, without permitting any other considerations, such as any stigma, to enter. He expressed his high appreciation of the work being done by the Council throughout the Empire, remarking that one of the great problems of to-day was to build up and to eliminate waste, and there was no form of waste more disastrous than that due to preventable disease.

Mr. Mifzud (Prime Minister of Malta) told the Congress that he attributed great importance to the work being done for the Empire by the Council and by the holding of congresses of the kind, as well as the Imperial efforts to stamp out all diseases in the territories of the Crown, instancing especially Mediterranean fever and venereal diseases.

Mr. James McNeill (High Commissioner for the Irish Free State) followed and expressed similar sentiments.

Dr. J. Alexander Mitchell (South Africa) spoke of the instruction and inspiration which the work done in this country had afforded to South Africa, where, however, racial differences and peculiarities rendered its application difficult. It was a pity that Governments had not recognised earlier that this campaign was not only a good one, but that it paid.

Dr. D. Colquhoun spoke of the drastic law which the New Zealand Government had placed on the Statute Book relating to the compulsory notification of venereal diseases, and the infliction of penalties in the case of those who, being infected, refused to persevere with the necessary treatment.

Sir Leonard Rogers referred specially to the case of India, and said that the greatest feature of the body responsible for the Congress was that it was one of the first bodies to break the " conspiracy of silence " which had so long attached to the subject. In the large cities of India, and especially in the ports, prostitution was appallingly prevalent, but there was the great off-setting advantage that the great mass of the population was rural, and in those areas early marriages were the rule, and these constituted a safeguard. But when the rural folk visited the towns they often went back infected. The spread of knowledge among the rural as well as the town populations would constitute the great means of checking the spread of venereal diseases.

Naval and Military Aspects.

Surgeon-Commander T. B. Shaw read a paper on the venereal disease problem as it affects the Navy, in which he bore testimony to the valuable work done by the Council at the various ports visited by the Navy. He said that the greater the incidence of venereal disease on shore, the larger would be the number of cases on board ship. The loss to the Service caused by venereal diseases was very heavy ; in 1921 the case-ratio of these diseases per 1000 men was 113 in the year, and the total days lost to the Service by men being on the venereal sick-list was 325,557, the daily average of men sick from these conditions being 892. In the years preceding the Great War there had been a steady decline in the incidence, but since 1915 these diseases had shown a steady increase, associated, no doubt, with a general increase in promiscuous sexual intercourse following a general laxity in sexual relationship. He was convinced that as this promiscuity would continue to be practised by some people in spite of all efforts to the contrary, the only hope of eventual extermination of these diseases lay in the wider application of means of disinfection of the parts immediately after connexion. His experience in the Service had convinced him that when prophylactic measures were properly used there was little or no risk of contracting the disease. Dr. Shaw proceeded to give his views on particular measures applicable to various conditions in the Service, such as restriction of leave and placing certain districts in foreign ports " out of bounds." He had an unflattering word to say about China and the city of Cape Town, the latter chiefly on account of the great prevalence of these diseases among the coloured population.

Major E. C. Lambkin (representing the War Office) read a paper on venereal diseases in the Army, in which he said that in the great advances made in connexion with the subject the social influences, especially temperance, played a great part. During the last 20 years, excluding the war period, the incidence of these diseases in the Army at home showed a steady decline. In 1904 these admissions were at the rate of 55·8 per 1000, and in 1922 25·9 per 1000.

The admissions in garrisons abroad had always been high, partly owing to lack of provision for regular exercise, partly to laxity of treatment in small scattered units. In the area of occupation on the Rhine and in Turkey the problem was one of real difficulty; in Cologne alone it was computed that there were 6000 prostitutes. The Aldershot Command continued to show the lowest incidence figures, and here the conditions were good, and the organisation of amusements and recreations rendered it less necessary for the soldier to spend his leisure outside. Twenty per cent. of the cases became infected while absent on leave, and many were found to have contracted their disease from amateurs, not from prostitutes. He emphatically declared, contrary to the view held by some, that the Army did not condone or encourage sexual irregularities, but did its best to make the conditions for the soldier as alert and invigorating as possible. There should be some organised attempt at prevention by medical means, such as the packet in use in the Navy. He knew of one command in which a practically clean bill of sexual health was due to the enthusiasm and friendly attitude towards the men of one orderly, who secured attention to immediate measures as soon as risk of infection had been encountered. In Army life concealment of these diseases was of rare occurrence; the trouble was to persuade the men of the need of taking due precautions.

In the ensuing discussion Sir Leonard Rogers expressed surprise that as immediate disinfection was of so much value when properly carried out, the figures for the Navy were not better than they had been shown to be. Colonel L. W. Harrison said his view was that in recent years the proportion of relapses to fresh infections had considerably diminished, due to the more efficient treatment now prevailing. Dr. T. G. Stokes asked whether measures had been adopted to prevent the spread of these diseases to the civilian population by discharged soldiers. Mr. E. B. Turner said his experience was that 48 per cent. of sufferers had attempted the prophylactic treatment, and it had failed. Success or failure in this matter depended largely, he thought, on the personality of the man in charge.

Dr. Shaw replied that if all the men could be got to use suitable prophylaxis immediately after connexion, venereal diseases would soon be exterminated. During six months 1400 preventive outfits were issued, and only one man using such got syphilis, and he delayed its use an hour. Work was now being done on a mercuric iodide soap.

Major Lambkin, in his replies, said there was, in the Army, no compulsion about the use of preventive measures. No man was discharged from the Army until he was deemed to be free from infection, and a man still having the disease when he left the Army was notified to attend the nearest venereal diseases clinic. Patients with gonorrhœa were subjected to every known test before discharge, and relapses were now far fewer than formerly. The moral teaching of the men was left largely to the chaplains.

The Administrative Position Within the Empire.

A paper on this aspect of the subject was read by Mr. C. M. Kohan, who presented a succinct epitome of enactments and regulations bearing on the subject in the various parts of the Empire, remarking that India appeared to be practically untouched by ad hoc legislation dealing with venereal diseases. The most drastic laws seemed to obtain in Queensland, but expert witnesses stated before a Royal Commission in Australia that notification by medical practitioners of cases of these diseases under their treatment was not being efficiently observed. That Commission also received much evidence as to considerable infection by female amateurs.

Dr. J. H. Mitchell (S. Africa) paid a warm tribute to Mr. Kohan for his laborious research.

Methods of Health Propaganda in the Far East.

Sir Claude Hill, K.C.S.I. (Director-General, League of Red Cross Societies), read a paper on this subject. He said that methods of sanitation could only become effective with the informed coöperation of the people themselves. In the League secretariat, therefore, all possible information had been collected as to the chief causes of the suffering and disability of the people. He set out in detail the methods of propaganda employed, and exhibited specimens of posters and other means of pictorial instruction. The organisation he represented had been able to arrange for the delivery of 30,000 popular lectures on the subject. Also a health exhibition was organised at Bangkok in 1922, and 50 per cent. of the population went to it.

Sir Harry Waters paid a tribute to the work being done by the Red Cross League, and especially that accomplished by Dr. Peters. Mrs. Billinghurst said that an attempt was made in Shanghai to start a V.D. clinic for women, but opposition to the proposal by the nursing sisters, who belonged to a Roman Catholic order, stultified this.

The Diseases in Relation to Race and Climate.

Dr. H. M. Hanschell read a communication on the relation of these diseases to race and climate, based largely on his experience as pathologist at the V.D. clinic at the Seamen's Hospital, Royal Albert Docks. He considered that reported differences in the several venereal diseases in different racial groups were founded mainly on locally conditional circumstances affecting the investigation of these diseases.

Dr. P. T. Harper spoke of the mildness of these diseases in Fiji, where the people were practically vegetarians and consumed very little alcohol. The bulky vegetable diet caused frequent evacuations, and intestinal toxæmia was thus rendered less liable to occur. He thought active immunity against syphilis was caused by their having been inoculated when quite young with yaws.

Lieut.-Colonel W. R. Dawson pointed out that cases of syphilis which were supposed to have been cured by injection of malaria still had active treponema pallidum in their system.

On Tuesday morning the meeting was presided over by Viscount Willingdon.

Syphilis and Cardiac Disease in India.

Sir Leonard Rogers read a paper in which he made a comparison of the incidence of syphilis and cardiac diseases in India with that in this country. Rheumatic endocarditis, in 1000 post mortems in London, gave a mortality of 3·7 per cent., whereas in Calcutta there were no deaths from this cause. Aneurysm gave 3·2 per cent. for London, 1·59 per cent. for Calcutta. Ulcerative endocarditis was also definitely more frequent in London than in India. Practically all the heart disease in India was due to syphilis.

The Chairman expressed his great appreciation of the work which had been done by the I.M.S., especially in such a country as India, where there was a great suspicion and distrust of anything new. Recently it had been decided, with the full concurrence of the Governments of Bombay, Madras, and Bengal, as well as that of Burma, to send out a small expert commission to give what expert help it could in assisting to stamp out venereal diseases, which, especially in the centres of industry and the ports of the country, were on the increase.

The position of the campaign in various parts of the Dependency was then dealt with in papers by Colonel R. M. Carter (Bombay) in relation to Bombay; Major W. L. Harnett, who dealt with Calcutta, Lieut.-Colonel T. G. Stokes, reviewing the Central Provinces; and Lieut.-Colonel W. H. Forster in relation to the Punjab. Colonel Carter thought more good would be done by controlling and seeking to improve brothels than by drastic suppression of them. All the papers showed sincere and careful work. There was a short general discussion.

Congenital Syphilis in India.

Dr. Kathleen Vaughan (Kashmir) spoke of her experiences during the three years she was in charge of the Jubilee Zenana Hospital at Srinagar. There was, she said, a regular trade in women with the Punjab, and when these women were no longer fit for their trade they returned to their native land, and no doubt swelled the ranks of the diseased there. The Indian woman was a passive agent in her own degradation, a very important fact to remember. Some of the women who had led such a life practised midwifery in their declining years. The speaker said that the Kashmiri Hindus were gradually disappearing, and four chief reasons for this were venereal disease, tuberculosis, osteomalacia (among the women), and the practice of infanticide by throwing unwanted children into the rivers. She had found the whole place to be overrun with disease. Children of 10 and 11 years of age were sent to their husbands' houses, and often were killed as a result. Many girls before reaching puberty had been infected by their husbands with gonorrhœa, and gonorrhœal ophthalmia was all too common. Dr. Vaughan said the first step should be the investigation of the conditions here described, then the distribution of suitable literature, then the provision of free treatment, and control of the depressing traffic in women which was going on.

The final paper of this morning's session was by Mr. H. W. Bryant, the general secretary of the Bombay Y.M.C.A., who said that some of the largest problems which workers in his agency had to contend with were housing and poverty, early marriages and infantile mortality, and prostitution. These he dealt with in detail.

(*To be continued.*)

IMPERIAL SOCIAL HYGIENE CONGRESS: THE DINNER.

The Congress dinner was held at the Princes Restaurant, Piccadilly, on Monday evening, Oct. 5th, when Sir Auckland Geddes, chairman of the Council, occupied the chair. After the loyal toasts, the toast of "The Empire" was proposed by Mr. L. S. Amery, Secretary of State for the Colonies, who spoke of the work of his predecessors, Mr. Joseph Chamberlain and Lord Milner, in building up a health tradition in the Colonies. The outlook as regards venereal disease was both serious and hopeful, for he realised how much could be done by a few people who really cared. Viscount Willingdon, who responded, acknowledged the part played by the British Social Hygiene Council in raising up a healthy virile people to carry on the work of the Empire. Sir Auckland Geddes proposed "The Congress," whose great object it was to keep steadily before responsible officials and the public the instructed point of view. Sir Alfred Mond, in responding, remarked on one very important item of progress—namely, that the fresh air of discussion had been let in on the subject of venereal disease. In this country syphilis had been reduced by one-half in the last four years, and he saw no reason why it should not be stamped out. Sir William Schooling proposed "The Delegates and Guests," to which, in the absence owing to illness of Dame Rachel Crowdy, response was made by Sir Claude Hill, who spoke of the increasing influence of British thought throughout the world and of the unique position of women in British social work, and by Mr. Junkin, of the Sun Life Insurance Office of Canada, who made the gratifying announcement that his company proposed to make a donation to the funds of the Council from their large unallotted surplus. Prof. Winifred Cullis neatly proposed thanks to Sir Auckland Geddes for presiding.

NEW MATERNITY HOME FOR CHESTER.—The new Chester Maternity Hospital, situated in White Friars, was opened on Sept. 30th by the Marchioness of Cambridge. The expenditure on the building and equipment amounted to £7000, and the hospital is opened free of debt.

Public Health Services.

SCHOOL MEDICAL SERVICE.

THE following figures are given in the reports for 1924:—

Name of district.	No. on roll.	Av. elem. school attendance.	No. of routine children examined.	No. of special examinations and re-inspections.	Percentage of children found on routine examination requiring treatment.*
West Ham ..	—†	—†	16,833	17,087	21·5
Llanelly	—†	—†	1,375	1,974	15·49
Nuneaton ..	7,789	—†	1,658	7,005	11·5
Soke of Peterborough C.C.	—†	1,425	500	595	—†
Rutland C.C. ..	—†	2,627	773	787	—†
Swindon B.....	8,868	7,701	2,491	5,168	33·3
Northampton B.	—†	—†	3,165	8,825	16·4
Dover	—†	5,461	1,888	1,725	13·2
Leicestershire C.C.	35,890	—†	10,255	7,600	11·9

* Excluding dental defects and uncleanliness.
C.C. = County council. B. = Borough. † = Not given.

West Ham.—Dr. F. Garland Collins's report is a straightforward account of the various phases of school-work well carried out, but there is no mention of any linking-up of the maternity and child welfare scheme with the school activities. The large number of special examinations is a token of the good work done. These children are recommended by teachers, parents, attendance officers, and nurses for examination; representing as they do the ailing section of the school population, they are deserving of special attention. Blind, deaf, physically and mentally defective children are all cared for, either in the borough itself or by arrangement with neighbouring authorities. Open-air classes are held in many schools and two new open-air schools are now in operation. Though only the 6, 7, and 8 year-old children are examined by the dentists, the quality of the work is high, as 83 per cent. of those found to require treatment get it.

Llanelly.—Many interesting tables are given in Dr. L. W. Pole's report which show at a glance the percentage of the various defects. The figures given for enlarged cervical glands (25·2 per cent.) is high, but no doubt includes all the cases of palpable glands. The vexed question of "What is anæmia?" is raised by the large percentage (32 per cent.) of routine children marked as anæmic. In these times it is encouraging to see that 79·8 per cent. of the children examined were found to be vaccinated. A dental surgeon has been recently appointed, and in order to overtake the long arrears has instructed the school nurses in examination for dental caries, and he proposes that they should carry out the inspections while he devotes his time to treatment. This is no doubt expedient as a temporary arrangement.

Nuneaton.—The varying standards adopted by examining medical officers is clearly shown when we see that less than 0·2 per cent. of Nuneaton children who were examined suffer from anæmia, against 32 per cent. in Llanelly, while 1·5 per cent. of the Nuneaton children have enlarged cervical glands, compared with 25·2 per cent. in Llanelly. Dr. K. E. Tapper remarks on the progress made in the school medical service since he took over the work, but points the road for the future advancement by, among other things, extending open-air facilities and opening special classes for abnormal children. He concludes with justice that the cumulative benefits of the early treatment of all ailing children cannot be measured in £ s. d.

Soke of Peterborough C.C. and Rutland C.C.—The school medical officer for Soke and Rutland, Dr. Christopher Rolleston, reports that, though correction of visual defects is popular, in only 21 cases out of 111 have parents in Soke sanctioned the proposed operations for enlarged tonsils and adenoids. He discusses the causes and effects of this condition, and finds that 58 per cent. of children in whom it is present show some retardation in their studies. Facilities for treatment and the coöperation of parents are both much better in Rutland than in Soke. Dr. Rolleston has investigated the physical condition and environment of all the backward children in his areas, and in about 50 per cent. of cases could find no causal factor.

Swindon.—Dr. Dunstan Brewer finds that primary cases of ringworm are often traceable to infection from cattle. He thinks that there is no justification for separating severe myopia from slight myopia and considering them as different entities. In addition to myopia, dental caries, enlargement and disordered action of the thyroid, and spinal curvature are important factors in secondary schools. Dental caries is neglected more often in secondary than elementary schools; apart from this, hyperthyroidism is the most prominent condition in Swindon secondary schools. Interesting comments are made on "overstrain."

Northampton.—The offices of medical officer of health and school medical officer have been combined so as to increase coöperation between the services. Dr. J. Doig McCrindle introduces the report of the assistant school medical officer, Dr. J. H. Mason. The pressure of work has made special inquiries impossible. The number of children unvaccinated is deplored. Investigation of 203 children who have left mental defective schools reveals that of those alive 40 per cent. are at work, 44 per cent. in institutions, and the remainder unemployed.

Dover.—Dr. A. B. McMaster reports that the facilities for visual correction are increasingly used. Investigation has been made of the relation of visual defects to improper illumination in schools. An account is given of lessons in mothercraft by school nurses who are also health visitors, and the scheme is to be commended. The lack of special schools is regrettable, though an open-air school is promised.

Leicestershire.—Dr. T. Robinson reports no provision of open-air schools or classes for blind, deaf, or physically or mentally defective children, and no definite orthopædic scheme is yet in operation. The number of crippled children (157) and of mentally defective (26) is incredibly small out of a school population of 35,800. Dr. J. B. Dalton states that in a small-pox outbreak at Melton Mowbray the schools were kept open and the children could thus be effectively supervised and absentees noted. Dr. S. E. Murray has investigated a series of 77 cases of heart disease and studied their ætiology.

INFECTIOUS DISEASE IN ENGLAND AND WALES DURING THE WEEK ENDED SEPT. 26th, 1925.

Notifications.—The following cases of infectious disease were notified during the week: Small-pox, 27; scarlet fever, 1961; diphtheria, 929; enteric fever, 76; pneumonia, 764; puerperal fever, 32; cerebro-spinal fever, 6; acute poliomyelitis, 16; acute polio-encephalitis, 1; encephalitis lethargica, 48; dysentery, 3; ophthalmia neonatorum, 103. There were no cases of cholera, plague, or typhus notified during the week.

Deaths.—In the aggregate of great towns, including London, there were 3 deaths from enteric fever, 14 from measles, 3 from scarlet fever, 32 from whooping-cough, 41 from influenza, and 24 from diphtheria. There were 173 deaths of children under 2 years from diarrhœa and enteritis, as compared with 220, 219, 230, and 218 in the preceding weeks. In London itself the deaths from diarrhœa and enteritis in children under 2 years numbered 46, as compared with 55, 43, 38, and 40 in the preceding weeks; there were 8 deaths from diphtheria, 4 from whooping-cough, and 5 from influenza.

The Services.

ROYAL NAVAL MEDICAL SERVICE.

G. W. Garde to be Surg. Lt.

ROYAL ARMY MEDICAL CORPS.

C. F. McLean to be temp. Lt.

MILITIA.

Capt. S. W. Hoyland to be Maj.

TERRITORIAL ARMY.

Lt.-Col. C. H. S. Redmond to be Bt. Col.
Capt. H. F. W. Adams, late R.A.M.C., to be Capt.
Capt. R. C. Aitchison (Res. of Off.) to be Maj. (prov.)
General Hospitals: Lt.-Col. A. H. Gosse to be Bt. Col.

ROYAL AIR FORCE.

Air Vice-Marshal D. Munro, C.B., C.I.E., Director of Medical Services, R.A.F., has been appointed an Honorary Surgeon to the King.

Group Capt. H. V. Wells, C.B.E., has been appointed an Honorary Physician to the King.

Flight Lt. J. C. Osburne is granted a permanent commission in the rank stated.

A. F. Cook is granted a short service commission as a Flying Officer for three years on the active list.

DEATHS IN THE SERVICES.

Major-General Sir Hayward Reader Whitehead, K.C.B., died at Lyndhurst on Sept. 28th, aged 70. A student at Charing Cross Hospital, he qualified with the M.R.C.S. in 1877, and afterwards held appointments both at the institution where he received his medical education and at the Royal Westminster Ophthalmic Hospital. In 1880 he took the F.R.C.S. Eng., and in the same year the L.R.C.P. Edin. Two years later he was awarded the Montefiore Gold Medal at the Army Medical School, Netley, and became a surgeon in the Army Medical Department, reaching the rank of surgeon-major in 1891. He saw service in the Tirah Expedition of 1897–8, and was present at the action at Dargai, the capture of Sampagha and Arhanga passes. He was also with the expedition against the Chamkanni Khel Afridis, and took part in the march through the Bazar Valley (mentioned in dispatches and promoted lieutenant-colonel). From 1891 to 1896 he was assistant professor of military surgery at Netley. In 1905 he was promoted colonel and appointed administrative medical officer in India. In 1908 he served with the Mohmand Expedition as principal medical officer (again mentioned in dispatches), and in the following year he was promoted surgeon-general and appointed Deputy Director of Medical Services, Southern Command. He was transferred to the Eastern Command in 1912. In the second year of the late war he was sent to Malta as Director of Medical Services, and was afterwards appointed to the British Salonika Force. Created C.B. in 1909, he was promoted to K.C.B. in 1917. He also held French, Serbian, and Greek decorations, and was a Knight of Grace of St. John of Jerusalem. He married, in 1893, Evelyn Wynne, daughter of Colonel Cayley, C.M.G., I.M.S.

SIR HAYWARD WHITEHEAD.

THE MOTOR SHOW AT OLYMPIA.

OCT. 9TH TO 17TH.

(BY OUR MOTORING CORRESPONDENT.)

THE CHOICE OF A CAR.

DURING the last six years British cars, especially the small and medium ones, have been developed to an amazing pitch of excellence. They are all in their particular ways first class, and prices appear to have come to rock-bottom and will probably start to rise before the next show. The trouble is to choose. The press particularly interested in motor vehicles issue many bulky show numbers with very complete and accurate buyers' guides ; the *Autocar* has excelled itself in particular. Presuming that the medical man will want a small or middle sized car, preferably covered and absolutely trustworthy ; that he will, perhaps, in the course of his duties overwork it and not attend to it overmuch, and that he will seriously consider the price of the car, these notes will direct him to a few of the many cars that satisfy these conditions. Every single car is superlatively good, and the modern engine develops about twice as much power for its size as the pre-war one. If he wants four-wheel brakes he can generally have them for another £20 or so if they are not fitted as standard ; most cars have low-pressure tyres, and all are fully equipped with excellent starting and lighting sets. Once the medical man buys a car, he may be fairly certain that he need buy nothing and do nothing for six months at least, except pour in fluids and occasionally pump in grease through special nipples with a special gun. The old days of buying indispensable accessories as extras, and then of anxious watching and expensive repairing, are over. Here, then, are a very few possible choices, in ascending order of price.

There are many excellent foreign cars on view as well as our own British makes, but fine as they are, there is none that cannot be matched in our own country.

A Selection of Cars.

Trojan, 10 h.p. Stand 182. Four-seater, £125 with solid tyres and £130 with pneumatic. Wonderful springs and exceptionally simple controls. Very economical running. The saloon cost £158 with pneumatics, but the open model is perfectly waterproof. No electric starter, but has a mechanical device worked from the seat.

Austin, 7 h.p. Stand 211. The smallest British car. Two roomy seats and a capacious boot with an extremely powerful little engine. £149.

Jowett, 7 h.p. Stand 98. Another very powerful miniature, tested fully in the West Riding. The open two-seater is £150, and there is a very good saloon at £200, a new and surprisingly roomy design.

Morris-Cowley, 11·9 h.p. Stand 184. Very sweet to drive, and the starter is exceptionally silent. All Morrisses now have all-weather equipment, shock absorbers, and balloon tyres. Open two-seater £162 10*s*., and £7 10*s*. extra for four-wheel brakes. Coupé £195, saloon £235, both including four-wheel brakes. The Oxford, which is 13·9 h.p. and very luxurious, costs £240 as an open two-seater, £285 as a coupé, and £350 as a saloon, all with four-wheel brakes.

Rover, 9 h.p. Stand 107. Two-seaters £185 and £212 10*s*., saloon £285, including four-wheel brakes. The "super" two-seater costs £220 with four brakes.

Cluley, 10 h.p. Stand 33. Two-seater £225. The all-weather 14 h.p., a recent model, costs £395, and the saloon £475.

Clyno, 11 h.p. Stand 99. This firm makes one of the best motor-cycles in the country, and their cars are equally good. Two-seater £162 10*s*., front brakes £7 10*s*. extra. Saloon, with four-wheel brakes, £265. 13 h.p. two-seater £245, coupé £285, with four-wheel brakes.

Standard, 11 h.p. Stand 106. Exceptionally roomy cars. Coupé £225. 14 h.p., one of the best English two-litre cars. Coupé £365, saloon £450. There are several other kinds of bodies. There is to be a new 12 h.p. chassis at the show, of which no details have been published.

Humber, 9 h.p. Stand 213. Touring £260. 12 h.p. coupé and saloon £555 ; 15 h.p. saloon £860, a splendid car.

Singer, 10 h.p. Stand 181. Two-seater £225, saloon £280, exceptional value. 14 h.p. saloon, £375.

Hillman, 14 h.p. Touring £295, Saloon £345.

Talbot, 8 h.p. Stand 147. Coupé £325. A very fast and sweet-running engine, quite exceptional for its size. 10 h.p. two-seater £350, coupé £415 ; 12 h.p. six-cylinder, wide two-seater, £750.

F.I.A.T. Stand 185. This company has sent a fine batch from their vast factory in Turin, and the little 10 h.p. model which has been so popular in the last two years is better than ever. The coupé costs £365, with four-wheel brakes extra.

Austin, 12 h.p. Stand 211. A beautiful little medium-powered car, four speeds and four-wheel brakes. Coach £395 ; 20 h.p. saloon £650. This is an excellent car of the larger variety at a very low price.

De Dion Bouton. Stand 215. This famous car, which was good even in 1896, worthily represents France. The 10 h.p. coupé costs £395, and the 12 h.p. coupé £610. This make is as fine as anything in the show.

Star, 12 h.p. Stand 136. Touring £365 and £395 ; saloon £445 ; 14 h.p. coupé £525 ; 20 h.p. coupé £700. This firm has made cars from the earliest days, and has six different chassis at this show to choose from, with a large variety of bodies.

Armstrong-Siddeley, 14 h.p. Stand 108. Coupé £425. These are very beautiful cars, by far the cheapest of the real luxury class. The 18 h.p. six-cylinder is one of the most attractive medium-powered cars in the world. The two-seater costs £450 and the coupé £550

Crossley, 14 h.p. Stand 139. All the Crossleys fit four-wheel brakes. The coupé is an ideal doctor's car and costs £540.

Vauxhall, 14 h.p. Stand 135. One of the fastest and best of the two-litre class. There are four-wheel brakes and four speeds on this year's models. Touring £550 and saloon £650 and £750.

Willys-Knight. Stand 150. The Willys six-cylinder and the *Overland* 13·9 h.p. are two fine American-designed machines, the first of which costs £695 and the second £340, both saloon bodies ; they are manufactured in this country.

Sunbeam, 14 h.p. Stand 110. The Sunbeam is one of the very best British cars ; it is designed by Louis Coatelen, and has a wonderful performance. The coupé is £750 and the two-seater £625, with a saloon at £795.

A Few Hints to Novices.

Other models besides those mentioned also have four-wheel brakes and four speeds, but both features are almost universal in the more expensive cars. For the benefit of readers new to motoring a few hints may not be out of place. Low-pressure tyres, now almost universal, increase the smoothness of the running very considerably, and four-wheel brakes add enormously to safety, especially on hills, but they must be kept in proper adjustment. Whether one dislikes gear-changing or not, four speeds are generally more comfortable than three, and certainly save petrol. The most important point to the medical man who drives his own car, next to docility and sweetness of handling, is protection ; this can be judged to a certain extent at sight, but ease of driving needs a road-test. Most coupés keep the wet out, but in some it is difficult to see and signal, and the buyer should sit in the car at the Olympia show and satisfy himself that he can see enough. He should choose a body of grey or brown, which does not show the dirt easily, and should satisfy himself that the controls are well within reach, especially the hand-brake ; inaccessibility is the worst feature of many cars and completely spoils a few excellent ones. He will find a dashboard light useful in open cars ; closed ones usually have an inside lamp. A "strangler," for cutting off the air when starting, is useful on cold nights, but not many British cars have them. And, lastly, when he takes his trial run, let him choose a wet day if possible. Many coupés and saloons that look beautifully snug at Olympia become a perfect shower-bath in wet weather through faulty joints in the windscreen and faulty fitting in the windows.

Correspondence.

"Audi alteram partem."

EXPERIMENTAL EPIDEMIOLOGY.

To the Editor of THE LANCET.

SIR,—In your leading article under the above heading in THE LANCET of Oct. 3rd there is one point on which I should wish to offer a comment and an explanation. When I first had the good fortune to engage the interest of Dr. Greenwood in these experiments, some five years ago, it soon became evident that the satisfactory progress of the investigation demanded close coöperation, not only in interpreting the results, but in planning the experiments. Since that time those experiments which were likely to yield data requiring statistical analysis have been devised by Dr. Greenwood and myself, after consideration of the results already obtained, and of the experimental or statistical difficulties likely to be encountered; and the experimental method has, from time to time, been modified as new problems or unforeseen difficulties have presented themselves.

Dr. Greenwood's part of the investigation has, therefore, not consisted merely in applying statistical methods of analysis to results which I have independently obtained; but throughout this part of the work the investigation has been a joint one in the full sense of the word, and the statistical side has been carefully considered in devising the experiments as well as in interpreting the results. It is our firm conviction that full and equal coöperation of this kind is essential if progress is to be made in the investigation of an intrinsically difficult problem.

I am, Sir, yours faithfully,

W. W. C. TOPLEY.

Public Health Laboratory, Manchester, Oct. 2nd, 1925.

TECHNICAL INSTRUCTION IN OPERATIVE SURGERY.

To the Editor of THE LANCET.

SIR,—From what I constantly see I am forced to conclude that in the plethora of subjects which students have nowadays to tackle surgical handicraft is apt to be forgotten, and that operative training is distinctly inferior to that of midwifery in which a number of personal attendances must accompany the application for admission to the final examination. I should like to know what percentage of the candidates for the higher surgical diplomas know how to mop a wound—that is, will apply the sponge with a steady vertical dab instead of a fierce wipe which sweeps away ligatures and causes small unclamped vessels to bleed.

I beg to invite the attention of clinical operators also to avoid teaching their pupils to retain their hands in full pronation when assisting at operation. There is not anything which tempts me more to open my mouth than when the assistant is retracting the edges of wound or applying a ligature to have the whole field obfuscated with his pronated fists, with the result that he barely sees what he is doing and I cannot see anything. It seems somewhat of a farce to set papers for examination containing questions—for example, the dissection and difficulties attending exposure of the pituitary gland, carotid body, or semilunar ganglion—to candidates who do not know how to hold a knife or handle a needle, and if entrusted with the application of a ligature to a pedicle, even money, will make such a violent tug on the second knot as to smash up the whole procedure.

I am quite aware that this burlesque is not, in the majority of instances, due to any personal fault of the unfortunate youth camouflaged with a licence to practise surgery, but to the miserable dog-in-the-manger stunt which gives nothing, and in wanton stupidity, admits of a yearly turn-out of men as qualified surgeons who are absolutely incapable for want of personal technical instruction to perform any operation on any living thing.

I wonder what kind of door or window an embryo carpenter would turn out if he had not served his time, with tools in fist, under the direction of his boss.

I am, Sir, yours faithfully,

Buenos Aires, Sept. 9th, 1925. JOHN O'CONOR.

*** Sir John O'Conor adds in a postscript that his letter was not inspired by anything which Mr. Bernard Shaw has written — or may write. Coming nearer home it cannot have been inspired either by the annotation on "The Surgeon as a Technician" in our issue of Sept. 26th (p. 657) to which it is so highly apposite.—ED. L.

PERSISTENT DIARRHŒA IN PHTHISIS.

To the Editor of THE LANCET.

SIR,—I have found two drugs not mentioned by Dr. de Carle Woodcock useful in the treatment of this very distressing complication. For some time now I have used intramuscular injections (or intravenous, in much weaker dilutions) of calcium chloride in doses of ½–1 gr. at intervals of two or three days. It has certainly some beneficial effect, especially if given in conjunction with large doses of bismuth by the mouth, say 1–2 dr. thrice daily. The action of calcium chloride is very slow, and injections should be continued for two or three weeks before definite results are expected. Persistent diarrhœa in tuberculosis is not always due to specific infection of the bowels; and when there is clinical evidence of fermentative changes in the large gut, dimol in doses of 1 gr. thrice daily is also a very useful adjunct to dietetics and other methods of treatment. This treatment is more effective if a preliminary period of semi-starvation has been prescribed and the tract prepared with a dose of calomel.

Dr. Woodcock raises an interesting point which will have to be settled soon unless pneumothorax therapy is to suffer a set-back. I refer to the connexion between artificial pneumothorax and a supervening diarrhœa. It appears to me that pneumothorax has a tendency to cause (sooner or later) the appearance of another active focus somewhere else in the body, and this tendency is more marked if comparatively high pressures have been used in producing collapse. The intestinal tract, or some other organ, may be the seat of one or two small and comparatively quiescent foci, and by collapsing the lung too effectively or too quickly the patient's system gets an overdose of autotuberculin, resulting in reactivation of these indolent foci.

This is, in my opinion, a real danger in pneumothorax treatment. One is apt to overlook the fact that pulmonary tuberculosis is one manifestation (of many) of a general disease.

I am, Sir, yours faithfully,

FELIX SAVY.

Grampian Sanatorium, Kingussie, Sept. 29th, 1925.

ALTRUISM AND THE "COMMON COLD."

To the Editor of THE LANCET.

SIR,—Your correspondent, Dr. J. A. Drake, writes of the thoughtless distribution of the "cold" from person to person. The late Sir William Robertson Nicoll is said to have maintained that "colds, neuralgia, and most other ills arise from the great modern curse of fresh air." The sound of such a voice crying in the wilderness must find an involuntary echo in many conservative hearts beating beneath heavy overcoats to-day; for the curse of fresh air is upon us, and the curse has come to stay. It is true, of course, that although there are few who dare to protest there are many who only accept the inevitable with reservations. Mr. Stephen Leacock, for instance, whilst strongly supporting the use of fresh air, says that after the house has been filled with it the windows and doors should be carefully closed so as not to let any of it escape; properly enclosed it will last for years. In this view he follows Bacon, who remarked in his "History of Life and Death" that: "It is to be observed that air accustomed to the body doth less prey on it, than new air, and often changed." But the fashion of the day is to favour fresh air in and out of season and in every place except the secret places of the home.

It is supposed by many that this retrogressive movement back to Nature will eliminate half the minor diseases of the cities, and in particular it is claimed that the common cold is doomed as soon as it is threatened with an open window. If it were to receive, they say, another name more in keeping with its ætiology, such as a "warm" or a "stuffy," it would never have an opportunity to attack anyone again. But here they do not convince the majority of reasonable people, who think that an open window threatens the patient more than his disease, and who know perfectly well that whether you call it common-or-garden or common-or-drawing-room, there is no doubt of the trouble being a *cold*.

It is, of course, an ingenious idea that the sensation of chill invariably associated with the onset is due to the first working of the disease in the system; and such no doubt is the explanation of the general experience which gave the name to the complaint. But it is too much to say that cold is not and cannot be an ætiological factor. There are certain people who react astonishingly rapidly to the chilling of their feet, by the immediate development of profuse rhinorrhœa. This may be a purely nervous disorder, but the fact remains that it is only necessary for them to remove their shoes and walk about on a cold floor for a few minutes in order to work the oracle, and if medical opinion cannot accept any mysterious connexion between the nose and the feet, apart from their common faculty of running, it must at least consider whether local improperly compensated chill does not play some part in stirring up nasal infection. Such a defence is the last ditch of the diehard; but even a proof of the connexion between cold and colds cannot save him from those who prefer to put the hardness into living.

It was long ago observed that whereas the English muffled themselves to the eyes when out of doors and permitted a freezing blast throughout their houses, the French, whilst keeping very warm indoors, took the air outside their houses in the scantiest garb. Each of these habits is as reasonable as it appears foolish. When man originally adopted clothing it was intended to permit his exposure to colder climates, and so far it was successful; but since then it has been used to dull the activities of the skin and the race has simply been geared up to warmer surroundings. Any system which encourages the exposure of healthy persons to extremes of temperature, and relegates clothing and housing to their proper place as mere supplements, is increasing the human efficiency. Especially it reduces susceptibility to chill, and the use of cold baths and the habit of wearing as few clothes as possible in all weathers is most likely to produce a healthy skin which will laugh at exposure to draughts. Such a régime is applicable only to those who react properly to it, and for those who suffer from constitutional disease, or for the aged, a protected life is obviously desirable. "And therefore," said Bacon, "poor people who live always within the smell of the same chimney and change not their seats are commonly longest lived, notwithstanding to other operations, especially for them whose spirits are not altogether dull, we judge change of air to be very profitable." Another class for whom the panacea of exposure proves ineffective in preventing colds is that enormous body of persons with nasal abnormalities. How many medical men hide a deflected septum beneath a smiling face? Reflection on such organic aspects of the common cold leads to consideration of infection. The only change in nomenclature which would at present find favour with the man in the street would be a change from active to passive mood. He considers himself caught, rather than catching. Agreeing with the ancient saying that chronic diseases are brought upon a man by himself but acute diseases are an act of God, he shifts the responsibility for his illness from himself on to the micrococci. And, however much the cultivation of general resistance to cold may be in fashion, it remains true that massive infection or foreign infection will lay low the Arctic explorer or the returning holiday-maker whose resistance may be supposed good. How then can the average man, relying pathetically on a cold bath and an evening stroll without an overcoat, hope to prevail against sudden proximity with a virulent strain of organisms recently developed in another suburb? It seems that everyone likes to get the greatest possible pleasure from misfortune. Seized by a cold some people concentrate on the physical compensations of bed, hot whisky, and sympathy; but others prefer moral satisfaction and carry on bravely with conscious pride. This is more subtle, but far more scandalous, for only too often the path of glory leads but to the grave—and the unfortunate thing is that it is usually someone else's grave. If everyday life must throughout the winter be cursed with such members of society let them at least be segregated. Let them travel only in railway carriages intended for the purpose and clearly labelled "colds," and there let them close the windows and there let them create an emulsion of pride and micrococci to their heart's content.

I am, Sir, yours faithfully,

Oct. 1st, 1925. F.R.C.S.

A SURGICAL COINCIDENCE.

To the Editor of The Lancet.

Sir,—The occurrence of the same surgical emergency twice in a patient must be very rare. A. M. Z., an Egyptian labourer, aged 40, was brought to me in January, 1923, suffering from acute intestinal obstruction. On examination I remarked a sausage-shaped swelling plainly visible under the abdominal wall. I operated under stovaine anæsthesia and reduced a volvulus of the sigmoid flexure, the patient making an uneventful recovery in 12 days. In August, 1925, a man suffering from abdominal pain came to me, and I was at once struck by something vaguely familiar about the look of his abdomen. It was the same sausage-shaped swelling in my same friend of two and a half years before. I operated under stovaine again, and this time I put some "reefs" into his sigmoid mesentery, so I hope his accident will not occur again. He made another uneventful recovery and left hospital in 13 days.

I am, Sir, yours faithfully,

H. E. S. Stiven,

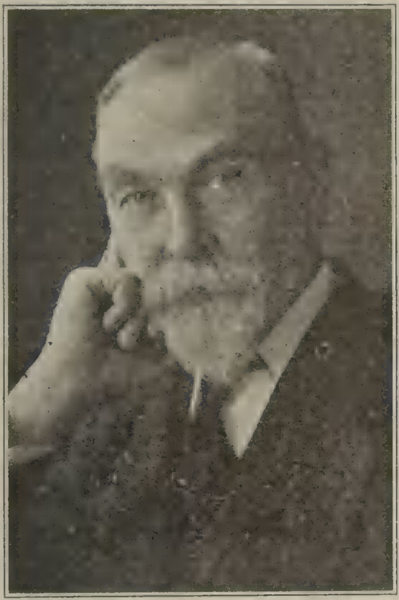
P.M.O., Egyptian Government Hospital,
Sept. 10th, 1925. Port Said.

Vaccination and Compulsion in Ireland.—Our Dublin correspondent writes: "The vaccination laws in Ireland are compulsory, and no loophole is provided for the conscientious objector. As a result vaccination is, on the whole, fairly thorough, and there has been no outbreak of small-pox in the country for a great many years. During the disturbed period four or five years ago vaccination, however, fell into partial neglect, and when the present Department of Local Government and Public Health came into power there was much leeway to be made up. In most areas this has been done without trouble or opposition, but in the south-east corner of the country, County Wexford, and neighbouring areas, there has for long been a fairly strong antivaccinationist movement, and opposition in that district has been general. The Department of Local Government has done its best to persuade the county health board of Wexford to enforce the law in regard to vaccination, but has failed, and recently the board was informed that steps would be taken by mandamus unless the law was obeyed. The board was still recalcitrant, and it is expected that the department will apply for a mandamus as soon as the courts sit."

Obituary.

JAMES NIVEN, M.A., LL.D. ABERD., M.A., M.B. CAMB.

BY the death, on Sept. 30th, of Dr. J. Niven, late medical officer of health for Manchester, the medical profession is deprived of a member of outstanding character and ability.



DR JAMES NIVEN.
[Photograph by Lafayette.

James Niven was born in 1851, and after graduating in Arts at Aberdeen he went to Cambridge, where he had a distinguished career as a mathematician. He was eighth wrangler in 1874 and was afterwards elected to a Fellowship at Queen's College; but although his original intention was to study engineering, he went on from Cambridge to St. Thomas's Hospital, and after taking his M.B. in 1880 held an appointment under the Metropolitan Asylums Board. He then went to Manchester and practised privately for four years in a southern suburb. In 1886 he was appointed medical officer of health for Oldham, and in 1894 the sphere of his influence was again widened when he succeeded Dr. John Tatham in the Manchester office. In the 28 years that followed he proved himself one of the greatest of medical officers of health, and one of the most useful public servants that Manchester has ever had. Apart from routine work he carried through many important reforms. In conjunction with the late Prof. S. Delépine he was able to bring about immense improvement in the city's milk-supply; considerable progress was made against tuberculosis, and great strides were made by Manchester in sanitation. It was largely due to his efforts that the death-rate fell from 24·26 per 1000 in the year before his appointment to 13·82 in 1921. His great achievements were made possible by his intense zeal, his patience and perseverance in attention to detail, and his courage in maintaining his opinions when he was satisfied that they rested on a basis of ascertained fact. There were others equally, or even more, successful in the everyday work of administration, but there was none who explored or proved so thoroughly the foundations of public health, or who pointed out so surely or so wisely the lines along which sanitary reform must proceed. No department of health practice escaped his scrutiny, and each in turn was made the subject of careful study; on each he left the impress of his critical and constructive wisdom. He was essentially a realist; he never lost sight of the economic aspect of health work, nor forgot that the chief end and justification of expenditure is the production of healthier, happier, more efficient citizens. Dr. Niven will be remembered for his insistence upon housing reform, for his revision of existing methods of dealing with infectious disease and the machinery of disinfection, and for his valuable interest in tuberculosis. He was the first to advocate notification, and based his useful reports on a voluntary notification scheme.

A record of his work, entitled "Observations on the History of Public Health Effort in Manchester," was published in 1923. His other contributions to medical literature were numerous, and his advice was rightly in request at the Ministry of Health, and by his colleagues in the health service. In giving evidence he was always terse and convincing. He was president of the Epidemiological Section of the Royal Society of Medicine, examiner in sanitary science at Cambridge, and lecturer in public health at Manchester University. For his services to preventive medicine he was given medals by the Royal Institute of Public Health and other bodies, and on his retirement from active work at Manchester in 1922, when he passed the age limit, he was publicly thanked by the city.

A former assistant writes: "As a man Niven was possessed of a singularly noble and winning character. One recalls especially his courage and independence, his tireless industry, his unselfishness, his intolerance of sham, and his love of children. Generous in his estimate of the work of others, he was a tireless critic of his own shortcomings. He had a great capacity for inspiring affection and devotion in his staff, and to those of us who were privileged to be so numbered there remains the enduring memory of a kind friend and 'true and very gentle knight.'"

Dr. Niven's somewhat shy and reticent manner hid a personal character that was generous and kindly. His life was one of continuous and unsparing effort in the public cause. Himself a remarkable man, he was a member of a remarkable family. His three brothers were also wranglers at Cambridge; the eldest was Sir William Niven, who was Director of Studies at Greenwich Naval College; and another was Charles Niven, first wrangler in 1867, who became professor of natural philosophy at Aberdeen. Dr. Niven's wife died 12 years ago, and he leaves three daughters.

ALAN REEVE MANBY, M.D. DURH., F.R.C.S. ENG.,

PHYSICIAN EXTRAORDINARY TO THE KING AND QUEEN ALEXANDRA.

Alan Reeve Manby was born in 1848, the son of Dr. Frederic Manby who practised at East Rudham, in Norfolk, and to whose practice he succeeded. He was educated at Epsom College and at Guy's Hospital, where he filled, among other posts after qualification, that of obstetric resident. Almost immediately he joined his father in a practice which had been carried on previously by his grandfather, and from the first he showed the qualities which made him a success in general practice. In 1885 he was appointed surgeon apothecary to the household at Sandringham, where the Prince of Wales, afterwards Edward VII., was often in residence, leading the life of a county gentleman. On the accession of Edward VII. Manby was appointed physician extraordinary, a position which he afterwards held in respect of the present King and of Queen Alexandra. In 1901 he went in attendance on the Prince and Princess of Wales, the present King and Queen, during their Colonial tour, when he received the M.V.O. Two years later he was knighted, and in 1918 promoted K.C.V.O. He was also a Knight Commander of the Order of Dannebrog of Denmark. His intimate relations with the Court were never allowed to interfere either with his practice or with his interest in professional and local affairs. He had a considerable obstetric practice and was at different times chairman of the Norfolk and Norwich Medico-Chirurgical Society, and president of the East Anglian branch of the B.M.A. He was the author of short but practical clinical contributions to THE LANCET and other medical journals, and devised some improvements in several surgical instruments.

He married in 1876 Charlotte, daughter of the late Edmund Farrer, of Petygards, Swaffham, by whom he had one son, Mr. Percy Manby, the Judicial Commissioner of the Malay States, and one daughter, the wife of Dr. F. J. Willans, who succeeded his father-in-law as surgeon apothecary to Queen Alexandra and the household at Sandringham.

EDMUND LANGLEY HUNT, C.M.G., L.R.C.P.I.

Dr. Langley Hunt, whose death took place in London on Sept. 30th, was superintending medical officer of Jamaica and was home on leave when he was taken ill. Born in 1868, the second son of the late E. Langley Hunt, of Co. Limerick, he qualified at the Irish Royal Colleges in 1894 and became a civil surgeon with the South African Field Force (1899–1902), part of his service being on the personal staff of the Commander-in-Chief. He was twice mentioned in despatches (two medals, six clasps) and was awarded the C.M.G. in 1902. Later he was employed in the Anglo-German Boundary Commission to Lake Chad, when he received the thanks of the German Government and the Royal Order of the Crown of Prussia (third class). He was appointed to the West African Medical Staff in February, 1905, and did notable work at the time of the outbreak of plague at Accra in 1908. In 1912 he was transferred to Ceylon as inspecting medical officer, becoming principal officer two years later. He was transferred on promotion to Jamaica as superintending medical officer in 1919. Dr. Hunt leaves a widow and three sons.

WILLIAM MORRISTON DAVIES, M.D. EDIN.

WE regret to note the death on Sept. 23rd, after a short illness at Bournemouth, of Dr. William Morriston Davies at the age of 83 years. Dr. Davies was a native of Glamorganshire and spoke Welsh only until he was 16 years old. He graduated at Edinburgh in 1873 and started practice the following year in Huntingdon with Dr. Michael Foster, father of the famous physiologist of the same name. After six years he moved to London, where he practised at 55, Gordon-square, amidst an ever-increasing circle of patients and friends, until his retirement in his sixty-ninth year to the Manor House, Stoke Poges. To his professional duties and to his private life Dr. Davies brought an earnestness and an intuition which gained him the affection of his patients and the esteem of the physicians and surgeons he called to his aid. In his private life he was an enthusiastic collector of old furniture, silver, and mezzotints, and devoted all the time he could spare to travel and sightseeing, in the course of which he acquired an intimate knowledge of the architectural beauties in the cities of England and Europe. A member of the Alpine Club, he was a keen climber, his wife accompanying him in most of his ascents. Dr. Davies was the possessor of an acute power of observation and an ability to retain a clear and correct memory of all that he saw and read. He was a lover of the beautiful both in art and nature, and with his strong personality acquired a host of friends whom he never failed to instil with a similar enthusiasm.

WILLIAM RONALD KIRKNESS, M.R.C.S. ENG.

Dr. W. R. Kirkness, who died on Sept. 19th at Pembury, Tunbridge Wells, at the age of 50, was a son of the late Captain W. Kirkness, of Falmouth. Born at Wimbledon in 1875, educated at Rossall and King's College School, and then deciding to follow the profession of his grandfathers, Dr. Kirkness, of Truro, and Dr. Soltau, of Plymouth, he entered King's College Hospital and became qualified M.R.C.S., L.R.C.P. in 1904. After holding appointments at Wolverhampton, Westminster, West Herts, Children's Hospital at Hackney, and Mount Vernon Hospital for Consumption, he took up general practice at Portsmouth where, in addition to his own work, he acted during the war as civil medical officer with 13th Battalion R.F.A., and R.A.O.C., R.A.S.C., and R.E. When the war ended his health began to deteriorate, so, greatly to the regret of his colleagues and patients at Portsmouth, Dr. Kirkness disposed of his practice and took a smaller one at Pembury, Tunbridge Wells, where he held the appointments of medical superintendent of Tonbridge Union Infirmary and Hospital, medical officer to the Capel Isolation Hospital, and district medical officer of the Tonbridge Union. During the six years he was at Pembury he gained the confidence of a large clientèle and was always willing to assist his fellow practitioners. A chill caught during the course of his duties brought on an attack of pleurisy and double pneumonia which proved fatal despite every attention. His death has cast a gloom over a district where he was universally liked.

Dr. Kirkness leaves a widow, a son, and a daughter, the former a student at Epsom College.

Medical News.

HOSPITAL DINNERS.—A large gathering of old students of *St. Bartholomew's Hospital* sat down in the Great Hall of the hospital on the evening of Oct. 1st, Mr. John Adams, F.R.C.S., occupying the chair. In proposing the health of the Hospital and of the Medical College, the Chairman contrasted the present body of 700 students, 80 per cent. of them University men, with the 223 students in attendance when he entered the hospital in 1868. Bart.'s men had, he said, won during the past year the gold medals at the M.D., M.S., and M.B., B.S. examinations of London University. Sir William Lawrence responded for the hospital in the regretted absence of Lord Stanmore through illness. Plans for new hospital buildings had, he said, at last been drawn up, to be submitted to the Governors next month. There would be 740 beds on the present site, with an additional paying-block of 80 to 100 beds. The Great Hall was to remain as it now was. Mr. W. McAdam Eccles, in replying for the College, spoke of the four medical professorships of London University within the school and of his wish to see all these chairs adequately endowed, and anatomy housed as well as physiology, physics, and pharmacology at present were. During the last summer they had been through another very successful post-graduate course for old hospital men. Sir Anthony Bowlby, who received an ovation, proposed the Health of the Guests, amongst whom were Sir John Bland-Sutton, Sir Archibald Garrod, Surgeon Vice-Admiral J. Chambers, Lieut.-General Sir William Leishman, and Air Commodore D. Munro. Sir John Bland-Sutton responded. The Chairman's Health was proposed by Dr. W. Langdon-Brown and warmly honoured. After dinner there was the usual adjournment for conversation to the School Library.

Charing Cross Hospital held its annual dinner on Oct. 5th in the Adelaide Gallery at Gatti's Restaurant. Dr. W. J. Fenton, the dean, took the chair. The loyal toast was described on the list as "Our Most Illustrious Doctor, His Majesty the King," and there were no other toasts and no speeches whatever, in spite of a vociferous demand that Sir Herbert Waterhouse should play the raconteur. After dinner Mr. John Goss, with the Cathedral Quartette, sang some really delightful songs and chanties. For the arrangement of some of them, including the favourite war song "And if I die, don't bury me at all," the pianist (Mr. Hubert Foss) was responsible, and several had been arranged or composed by Mr. S. Taylor Harris, a student at the hospital. His very spirited ditty about a pirate sprang into immediate local popularity which should become widespread.

The annual dinner of past and present students of *St. George's Hospital* was held on Oct. 1st at the Hyde Park Hotel, Mr. F. Ashton Warner, F.R.C.S., in the chair, when 160 alumni of the hospital attended, nearly a record gathering. Diners were grouped at small tables and speeches were cut down to a minimum. After the loyal toast, Mr. W. C. Bridgeman, First Lord of the Admiralty, proposed the Hospital and Medical School. He contrasted the difficulties of the medical profession with those of politicians, inferring that, if anything, the doctor had rather the better of it. Some of the general practitioners present appeared to be not quite sure that this was really the case. Dr. James Torrens, Dean of the Medical School, in responding to the toast spoke hopefully of the future of the School, and announced that the entry this year was the highest since 1899. Sir Humphry Rolleston and Sir George Turner were toasted by the company and briefly responded. The success of the evening was largely due to the work of the secretaries, Mr. G. A. Ewart, Dr. Bellingham-Smith and Dr. Gilbert Orme.

The annual dinner of the old students of the *London Hospital* was held on Oct. 1st at the Trocadero Restaurant. The chair was taken by Sir Hugh Rigby, senior surgeon to the hospital, and nearly 200 old students were present. The Chairman congratulated the hospital on its great and increasing prosperity. The school, he said, showed no signs of birth control, and though labour might sometimes be difficult her sons were more numerous than ever, and as devoted as ever to the mother who gave them birth. Financially, thanks to the wizard hand of Lord Knutsford, the hospital had never been more prosperous, and the appreciation which laymen felt for its work was well illustrated by the generous gifts of £10,000 each from Lord Bearsted and Mr. Barron for a clinical theatre and a pathological laboratory respectively, as well as by the latest gift of £50,000 from an anonymous donor for research. With the development of the medical unit, of the system of annex hospitals, and of changes in the organisation of the receiving room and the out-patient department, many old traditions were passing away, but he hoped that nothing would ever be done to disturb the responsibility with which the residents were entrusted, to which we so largely owed the splendid type of practitioner whom everyone associated with the hall-mark of the London Hospital. Team-work was the great demand of the present day, but nowhere could be found a more united or a more devoted team than the past and present students of the hospital which he and his audience were proud to own as their mother.

The annual dinner of *St. Mary's Hospital Medical School* was held on Oct. 5th in the Connaught Rooms, Mr. Leslie Paton in the chair. A large gathering of St. Mary's men and women and their guests was present. In proposing the toast of the school, the chairman said that a teaching hospital filled three important functions: first, the healing of patients; second, research; and third, the teaching of students. It was the third function that was the most vital; no research work was so good as that which was constantly clarified by teaching it to others, and clinical work by being constantly and critically watched by students was benefited greatly. Mr. Paton then paid a feeling tribute to the late Sir Anderson Critchett. Mr. A. R. Prideaux, chairman of the Hospital Board, spoke in reply of the hospital's finances. The past year showed a deficit of £3000, but the prospects for the coming year were more encouraging. A gift of £2000 had recently been received for the purchase of radium, and a further £2000 had been given anonymously. The National Sporting Club had contributed over £6000 annually as the proceeds of boxing tournaments. Dr. C. M. Wilson, Dean of the School, who also replied, explained how the expenditure of the school had increased out of all proportion to the pre-war income from students' fees. The prestige of the school to-day was higher than it had ever been, and he had a very sensitive barometer for estimating that prestige. On the athletic side also the school record was a brilliant one. The health of the chairman was proposed in a humorous speech by Dr. R. H. Miller, and Mr. Paton replied.

The annual dinner of the past and present students of the *Middlesex Hospital* was held at the New Criterion Restaurant at 7.30 P.M. on Oct. 1st. The chair was occupied by Sir Arnold Lawson, ophthalmic surgeon to the hospital. There was a large gathering of the past and present students and their friends, numbering in all about 250. Among the guests were the Hon. Sir Arthur Lawley, Prof. E. A. Gardner, and the Mayor of Marylebone. After the usual loyal toasts, the Chairman proposed prosperity to the Middlesex Hospital and its medical school. He referred to the arrangements being made to carry on the work of the hospital during the rebuilding, to the efforts in train to raise the necessary funds, and to the satisfactory response so far obtained, thanks to the help afforded by the various agencies concerned, including the press, the various committees, the students, and the nurses. He announced that the efforts of the past students and present together so far had realised £4000. Mr. Reginald Beddington replied on behalf of the board. He alluded to the arrangements made to supply accommodation for patients during the rebuilding and stated that they would not involve the loss of a single bed. Mr. Eric Pearce Gould, the Dean, replied for the school. He paid a generous tribute to the work of his predecessor, Mr. A. E. Webb-Johnson. He referred with great satisfaction to the developments in the school during the past year, notably to the appointment of Prof. E. C. Dodds to the University chair of biochemistry, and to the generous gift of a large sum for the study of laryngology and otology from Mr. T. Ferens. Dr. T. L. Hardy, of Birmingham, replied on behalf of the past students, and referred with pride to the reputation of his old school. Mr. E. W. Riches, the Broderip Scholar, made a witty and amusing speech in replying for the present students. The toast of the Guests was proposed by Mr. Sampson Handley, and responded to by Sir Arthur Lawley and Prof. Gardner. The toast of the Chairman was proposed by Dr. R. A. Young. Sir Arnold Lawson replied, expressing his gratification at the large attendance.

The annual dinner of past and present students of the *Westminster Hospital* was held on Oct. 1st in Oddenino's Restaurant, Regent-street. Dr. H. B. Brackenbury was in the chair. The toast of Westminster Hospital students, past and present, was given by the Chairman, who said that he thought of all those who were there that evening as present students; past students could only refer to those who had passed away. A student of Westminster Hospital remained a student throughout his life, still learning from the work which went on there. He had, he said, in special memory many who had now passed away after doing excellent work, and also the actual students of to-day who were faced with new and difficult problems. The toast was responded to by Dr. Charles Roper on behalf of the old students, and Mr. R. G. Hodges made a happy and skilful speech for the younger generation. Mr. E. Rock Carling proposed the toast of the Chairman. For the remainder of the evening the ratio of songs to speeches was judiciously balanced, and the function was a very enjoyable one.

Chelsea Clinical Society.—The annual dinner of this society will be held at the Café Royal, Regent-street, on Tuesday, Oct. 20th, at 7 for 7.30 P.M. Dr. P. Seymour Price, president, will be in the chair.

University College Hospital Dinner.—The annual dinner of past and present students of University College Hospital will be held at the Hotel Cecil, Strand, on Friday, Oct. 16th, at 7.30 P.M., with Dr. Herbert Spencer in the chair.

Prince of Wales's General Hospital: Reunion Association.—The annual dinner usually held during "motor week" will this year take place early in November. Members will be notified in due course of the actual date and place.

Harveian Society of London.—A clinical meeting of the Society will be held at the Hospital for Epilepsy and Nerve Diseases, Maida Vale, on Thursday, Oct. 15th, at 4.30 P.M.

Society of Superintendents of Tuberculosis Institutions.—A meeting of the Society will be held at 122, Harley-street, on Monday, Oct. 19th, at 3 P.M. Papers will be read by Dr. J. W. Linnell on Some Reflections on the Diagnosis and Treatment of Tuberculosis, and by Dr. F. R. Walters on Needs and Indications in Pulmonary Tuberculosis.

People's League of Health.—The first of the Sims Woodhead series of constructive educational health lectures under the auspices of the League will be delivered to-day (Friday) by Prof. Pembrey on Elementary Anatomy and Physiology in the Fyvie Hall, Regent-street Polytechnic, Regent-street, W., at 6 P.M.

Medical Defence Union.—At a meeting of the Council of the Medical Defence Union, Ltd., held on Oct. 1st, Sir Herbert Waterhouse, consulting surgeon to Charing Cross Hospital, was appointed president of the Union for the ensuing year, in room of Mr. W. G. Spencer, retired.

Royal Society of Arts.—On Monday, Nov. 9th, a conference will be held at the house of the society, John-street, Adelphi, W.C., on How the Midwife can Help in the Reduction of Maternal and Infantile Mortality. The chair will be taken by Sir Francis Champneys, Bt. The speakers will include Dr. John S. Fairbairn, Miss E. M. Doubleday, Lieut.-Colonel Fremantle, and Sir John Robertson.

Medical Society of London.—The programme for the first half of the session 1925–26 opens with the annual general meeting at the House of the Society, 11, Chandos-street, W., on Monday, Oct. 12th, at 8 P.M. At 8.30 P.M. Sir Holburt J. Waring will deliver his presidential address on Osteopathy, Chiropractic, and Medicine. The following meetings will also be held on Mondays, at 8.30 P.M.: Oct. 26th, clinical evening, exhibition of cases and skiagrams; Nov. 9th, discussion on Obscure Pyrexia in Childhood, to be introduced by Dr. Robert Hutchison; Nov. 23rd, clinical evening; Dec. 14th, discussion on the Treatment of Genito-Urinary Tuberculosis, to be introduced by Mr. Cyril A. R. Nitch.—The Lettsomian Lectures on the Principles of Treatment in Relation to Diseases of the Nervous System will be delivered on Monday, Feb. 15th, Wednesday, Feb. 24th, and Monday, March 15th, 1926, by Dr. E. Farquhar Buzzard.—The annual oration will be delivered in May, 1926, by Sir Berkeley Moynihan. —The Lloyd Roberts Lecture on Man's Structural Defects will be given on Monday, Nov. 16th, at 5.30 P.M., at the Royal Society of Medicine by Sir Arthur Keith.

Dr. Addison has been adopted as prospective Labour candidate for the Swindon Parliamentary Division.

THE annual service of the Guild of St. Luke, Evangelist and Physician, will be held on St. Luke's Day, Oct. 18th, at 6.30 P.M., at Westminster Abbey.

WEST KENT MEDICO-CHIRURGICAL SOCIETY.—The first meeting of the seventieth session will be held to-day (Friday) in the Board Room of the Miller General Hospital, Greenwich, S.E., at 8.45 P.M., when the officers and council for the ensuing year will be elected. Dr. H. S. Knight, the President, will occupy the chair. Clinical cases will be shown by several members.

UNIVERSITY OF BRISTOL.—In a special Final Examination for the degrees of M.B., Ch.B. (Part II.), held recently, the following candidates were successful in public health only (completing examination): Charles T. Hyatt and Hubert J. Satchwell.

ROYAL FACULTY OF PHYSICIANS AND SURGEONS OF GLASGOW.—At the monthly meeting of the Faculty, held on Oct. 5th, George Lynn Pillans, M.C., L.R.C.P., L.R.C.S. Edin., L.R.F.P.S. Glasg., was admitted, after examination, as a Fellow of Faculty.

MANCHESTER BABIES' HOSPITAL.—The new buildings will be opened by the Earl of Derby on Monday, Oct. 19th, at 3 P.M.

THE LATE DR. WILLIAM SANG.—Dr. Sang, who died recently at his residence in Dundee, at the age of 80 years, was a native of that city. He retired from practice only three years ago owing to ill-health. He graduated at Edinburgh University in medicine and surgery in 1871, proceeding to the M.D. degree in 1884. He had contributed several papers on medical subjects to medical journals, among them being one, in 1891, on a case of accidental poisoning by Epsom salts.

ROYAL INSTITUTE OF PUBLIC HEALTH.—A course of lectures on Preventable Diseases will be delivered in the Lecture Hall of the Institute, 37, Russell-square, London, W.C. 1, on Wednesdays, Oct. 14th to Dec. 16th, at 4 P.M. The first lecture will be delivered (on Oct. 14th) by Colonel S. Lyle Cummins on the Prevention and Arrest of Tuberculosis. Lieut.-Colonel Cuthbert James will be in the chair. These lectures, whilst intended primarily for the Fellows and members of the Institute, all others, men and women interested in medico-sociological problems, are cordially invited to attend. The Harben lectures will be given by Prof. J. C. G. Ledingham on Current Problems in Bacteriology and Immunology, and their bearing on Public Health Effort, on Dec. 9th, 10th, and 11th, at 5 P.M. Copies of the syllabus may be obtained from Dr. E. W. Hope and Dr. T. N. Kelynack, hon. secretaries, at the Institute.

SURGICAL INSTRUMENT MANUFACTURERS' ASSOCIATION, INC.—The annual dinner of this Association, which is affiliated to the National Union of Manufacturers, was held on Friday, Oct. 2nd, at the Holborn Restaurant, Kingsway, Mr. Ernest W. Mayer being in the chair. The toast of the Association was proposed by Mr. H. E. Curtis, who gave a short résumé of its history. The Association, he said, was a war-time product, due to the thought of Mr. Edwin Arnold, who, in 1917, brought, by its foundation, the members of the surgical instrument trade together. The first President was Mr. Down under whose able guidance the Association had flourished exceedingly. Mr. Godfrey Cheesman, general secretary of the National Union of Manufacturers and former secretary of the Association, in response to the toast, said that it should be incumbent on public spending bodies to buy British goods, and gave some instances where certain communities had transgressed in this respect. He referred to the spirit of amity and coöperation that existed in the Association, and salted his remarks with several amusing anecdotes. Colonel A. Young, C.B.E., proposed the Guests in a humorous speech, and Sir W. Arbuthnot Lane, in reply, paid a tribute to the superiority of British surgical instruments. "Surgeons don't realise," he said, "how much they owe to the surgical instrument makers." "The Chairman" was proposed by Mr. W. T. R. Beckett, and Mr. Mayer replied. During the evening a pleasant programme of music and song was dispensed by Miss Ethel Kemish, Miss Blanche Gaston Murray, Mr. George Webber, and Mr. Hector Gordon.

Medical Diary.

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

Monday, Oct. 12th.

WAR: at 5 P.M.
Presidential Address:
Lt.-Gen. Sir William Leishman (Director-General, A.M.S.): Research in the Medical Services.

Tuesday, Oct. 13th.

THERAPEUTICS AND PHARMACOLOGY: at 5 P.M.
Discussion on
Some Difficulties in the Use of Insulin, to be opened by Dr. George Graham (President).
The following have also promised to contribute:
Prof. H. MacLean, Dr. R. D. Lawrence, Dr. E. P. Poulton, Dr. G. A. Harrison.

Thursday, Oct. 15th.

DERMATOLOGY: at 5 P.M. (Cases at 4 P.M.)
Cases:
Dr. J. H. Sequeira: (1) A Private Case for Diagnosis. (2) Kaposi's Multiple Pigment Sarcoma.
Dr. A. C. Roxburgh: Lupus Erythematosus.
Other cases will be shown.

Friday, Oct. 16th.

ELECTRO-THERAPEUTICS: at 8.30 P.M.
Presidential Address:
Dr. Alastair MacGregor: Then and Now.

MEDICAL SOCIETY OF LONDON, 11, Chandos-street, Cavendish-square, W.

MONDAY, Oct. 12th.—8 P.M., Annual General Meeting. 8.30 P.M., Ordinary Meeting. The President's address on Osteopathy, Chiropractic, and Medicine, by Sir Holburt J. Waring, to be followed by a discussion.

BIOCHEMICAL SOCIETY (Biochemical Department, Cambridge).

SATURDAY, Oct. 10th.—3 P.M., Dorothy Needham and J. Needham: The Micro-Injection of pH and rH Indicators. G. S. Lund and C. G. L. Wolf: The Fermentable Sugar in Blood. F. G. Hopkins: An Oxidation of Proteins promoted by Glutathione. Mrs. H. J. Coombs and Marjory Stephenson: The Gravimetric Estimation of Bacterial Growth. L. J. Harris: Extension of the Principles of Acidimetry. Application to Certain Biochemical Problems: (*a*) Analysis of Amino-acid Mixtures; (*b*) Volumetric Estimation of Casein and other Proteins: (*c*) The Rationale and Prediction of Protein Behaviour; (*d*) Polypeptides; (*e*) Insulin. H. F. Holden: The Estimation of Glucose. C. S. Hicks: The Effect of a Tryptophane-Free Diet on the Thyroid Gland of the Rat, with Studies in Heat Production. C. S. Hicks: The Ultra-Violet Absorption Spectrum of Acetyl-Thyroxin. C. S. Hicks and M. L. Mitchell: A Preliminary Report of the Study of Induced Polyuria in Rats. H. W. Dudley and W. V. Thorpe: A Synthesis of N-methylputrescine and of Putrescine. J. B. S. Haldane: The Effect of Diuresis on Purin Metabolism. H. J. Channon and J. C. Drummond: Feeding Experiments with Spinacene.

ROYAL SOCIETY OF TROPICAL MEDICINE AND HYGIENE, 11, Chandos-street, Cavendish-square, W.

THURSDAY, Oct. 15th.—8.15 P.M., Opening Meeting of Session. Dr. Andrew Balfour, C.B., C.M.G., President: Inaugural Address on Some of Our Pioneers, illustrated by lantern slides. The meeting will be preceded at 7.45 P.M. by an exhibition of some interesting works on tropical medicine and hygiene dating from the middle of the eighteenth century onwards.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

THE FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W.

MONDAY, Oct. 12th, to SATURDAY, Oct. 17th.—COMBINED CHILDREN'S COURSE, Paddington Green, Victoria Hospitals, and Children's Clinic. Morning and afternoon sessions.—CENTRAL LONDON THROAT, NOSE, AND EAR HOSPITAL, Gray's Inn-road. Special course in Laryngology, Rhinology, and Otology. Clinical course and Operative Surgery course, of which one or both may be taken.—LONDON SCHOOL OF HYGIENE AND TROPICAL MEDICINE, Endsleigh-gardens. Tuesday and Thursday, clinical demonstration by Dr. G. C. Low and Dr. P. Manson-Bahr at 2 P.M. The subjects considered will be the more important diseases of tropical countries, illustrated by cases in hospital.

NATIONAL HOSPITAL FOR THE PARALYSED AND EPILEPTIC, Queen-square, Bloomsbury, W.C. 1.

POST-GRADUATE COURSE: OCTOBER-NOVEMBER, 1925.

CLINICAL LECTURES AND DEMONSTRATIONS.

MONDAY, Oct. 12th.—2 P.M., Out-patient Clinic: Dr. Hinds Howell. 3.30 P.M., Paraplegia and Its Treatment: Dr. Riddoch.

TUESDAY, Oct. 13th.—2 P.M., Out-patient Clinic: Dr. Walshe. 3.30 P.M., Epilepsy: Dr. Adie.

THURSDAY, Oct. 15th.—2 P.M., Out-patient Clinic: Dr. Kinnier Wilson. 3.30 P.M., Syringomyelia: Dr. Martin.

FRIDAY, Oct. 16th.—2 P.M., Out-patient Clinic: Dr. Adie. 3.30 P.M., Acoustic Nerve Tumours: Mr. Sargent.

The fee for the Course, including Pathology lectures, is £5 5*s*. For those who hold Perpetual Tickets the fee is £3 3*s*.

COURSE OF LECTURES AND DEMONSTRATIONS ON THE PATHOLOGY OF THE NERVOUS SYSTEM.

THURSDAY, Oct. 15th.—12 noon, Neuroglial Reaction: Dr. J. G. Greenfield.

COURSE OF LECTURES AND DEMONSTRATIONS ON THE ANATOMY AND PHYSIOLOGY OF THE NERVOUS SYSTEM.

MONDAY, Oct. 12th.—12 noon, (*a*) The Peripheral Nervous System, (*b*) Spinal Cord: Dr. J. L. Birley.

Dr. H. J. Macbride will give a COURSE of EIGHT CLINICAL DEMONSTRATIONS, chiefly on METHODS OF EXAMINATION OF THE NERVOUS SYSTEM, in the Wards at 10 A.M. on Tuesdays and Fridays, if sufficient entries are received. The fee for this Course will be £2 2*s*. (commencing Tuesday, Oct. 20th).

Mr. Armour and Mr. Sargent operate at the Hospital on Tuesday and Friday mornings at 9 o'clock, or at such other times as may be announced.

Any part of the Course may be taken separately. Special arrangements will be made for those unable to take the whole Course.

Fees should be paid to the Secretary of the Hospital at the Office on entering for the Course.

J. G. GREENFIELD, Dean of Medical School.

UNIVERSITY COLLEGE, London.

MONDAY, Oct. 12th.—5 P.M., Mr. R. J. Lythgoe: The Physiology of Hearing and Vision (first of a course of eight public lectures).

WEDNESDAY.—5 P.M., Second lecture.

ST. JOHN'S HOSPITAL, 49, Leicester-square, W.C.

TUESDAY, Oct. 13th.—5 P.M., Dr. A. C. Roxburgh: Eruptions due to Physical Causes.

THURSDAY.—5 P.M., Dr. R. F. Fagan: Pathological Demonstration.

ROYAL INSTITUTE OF PUBLIC HEALTH, 37, Russell-square, W.C.

WEDNESDAY, Oct. 14th.—4 P.M., Colonel S. Lyle Cummins: The Prevention and Arrest of Tuberculosis.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N.

THURSDAY, Oct. 15th.—3 P.M., Mr. Norman Fleming: Demonstration of Fundus Cases. 4.30 P.M., Mr. Aubrey Goodwin: Lecture, Treatment of Vaginal Discharges.

Daily: In-patient and Out-patient Clinics in General and Special Departments, Operations, &c.

HOSPITAL FOR SICK CHILDREN, Great Ormond-street, W.C.

THURSDAY, Oct. 15th.—4 P.M., Mr. Fairbank: Spinal Caries.

ANCOATS HOSPITAL POST-GRADUATE LECTURES.

THURSDAY, Oct. 15th.—4.15 P.M., Mr. E. E. Hughes: The Significance of Urinary Symptoms.

MANCHESTER ROYAL INFIRMARY POST-GRADUATE LECTURES.

TUESDAY. Oct. 13th.—4.15 P.M., Mr. D. L. Sewell: Chronic Empyema of the Maxillary Antrum.

FRIDAY.—4.15 P.M., Dr. A. McDougall: A Point of Moment in the Treatment of Epilepsy.

Appointments.

DUNCAN, A. G. B., M.D.Aberd., D.P.H., has been appointed Medical Officer of Health, Kidsgrove Urban District.

ELLIOTT, G. M., M.B., Ch.B. Edin., Medical Officer of Health for the County of Selkirk and the burghs of Galashiels and School Medical Officer.

WHYTE, A. H., M.B., B.S. Durh., F.R.C.S. Eng. & Edin., Hon. Assistant Surgeon to the Royal Victoria Infirmary, Newcastle-upon-Tyne.

WILSON, E. A., M.D. Edin., Junior Assistant Medical Officer, Cheshire County Mental Hospital.

National Hospital for Diseases of the Heart: TROTTER, W., M.D., M.S. Lond., F.R.C.S. Eng., Consulting Surgeon; CLEMINSON, F. J., M.Ch. Camb., F.R.C.S. Eng., Consulting Surgeon for Diseases of the Ear, Nose, and Throat.

Vacancies.

For further information refer to the advertisement columns.

Barry Urban District Council.—H.S. at rate of £200.

Birmingham, City Mental Hospital.—Asst. M.O. £350.

Cambridge, Addenbrooke's Hospital.—Cas. O. and Res. Anæsthetist. At rate of £130.

Cambridgeshire Tuberculosis Colony, Papworth.—H.P. At rate of £100.

Central London Throat, Nose, and Ear Hospital, Gray's Inn-road, W.C.—Hon. Asst. Out-patient Registrar.

Colwyn Bay and Colwyn Urban District Council.—M.O.H., &c £800.

East London Hospital for Children and Dispensary for Women, Shadwell, E.—H.P. At rate of £125.

Farringdon General Dispensary, Holborn-circus, E.C.—Surg. for Throat, Nose, and Ear Dept.

Greenwich, Dreadnought Hospital.—S. in charge of Out-patients.

Guy's Hospital, S.E.—Salomon's Infant Welfare Centre. M.O. 1½ guineas per session.

Holland County and Boston Borough Education Committee.—Dent. S. £450.

Hospital for Consumption and Diseases of the Chest, Brompton, S.W.—H.P. At rate of £50.

Hospital of St. John and St. Elizabeth, 40, Grove End-road, N.W.—H.P. and H.S. At rate of £100 and £75 respectively.

Hull City Education Committee.—Asst. Sch. M.O. £600.

Ipswich Mental Hospital.—Asst. M.O. £300.

Liverpool, Brownlow Hill Infirmary.—M.O. £500. Also Asst. M.O. £200.

London Hospital, E.—First Asst. and Registrar. At rate of £200.

Manchester Royal Infirmary.—H.S. At rate of £50.

Metropolitan Hospital, Kingsland-road, E.—Sen. and Jun. H.P. Sen and Jun. H.S. Also Two Cas. O.'s. Each at rate of £100.

Middlesex County Council Committee for the Care of the Mentally Defective.—Asst. M.O. £600.

Miller General Hospital for South-East London, Greenwich-road, S.E.—Pathologist, £500, Asst. in Out-patient Dept. £150, and H.S. £125.

National Hospital for the Paralysed and Epileptic, Queen-square. W.C.—Res. M.O. £200.

Newark Hospital and Dispensary.—Res. H.S.

Plymouth County Borough.—Asst. M.O.H. £750.

Plymouth, Didworthy Sanatorium, South Brent.—Res. M.O. £600.

Queen's Hospital for Children, Hackney-road, Bethnal Green, E.—Asst. S.

Royal Chest Hospital, City-road, E.C.—Phys. to Out-patients. £50.

Royal Northern Hospital, Holloway, N.—P.

St. Bartholomew's Hospital.—Asst. Ophth. S.

Seychelles Government.—Asst. M.O. and Res. S. Rs.6500.

Southend-on-Sea County Borough.—Asst. M.O. £600.

Wolverhampton and Staffordshire Hospital.—H.S. At rate of £150.

The Chief Inspector of Factories, Home Office, London, S.W., announces vacant appointments for Certifying Factory Surgeons at Yeovil (Somerset) and Whitchurch (Salop).

The Home Secretary gives notice that, in consequence of the resignation of Dr. E. le C. Lancaster, one of the Medical Referees under the Workmen's Compensation Act, 1906, for the District of the Neath and Port Talbot County Court (Circuit No. 31), the appointment held by him is vacant. Applications for the post should be addressed to the Private Secretary, Home Office, and should reach him not later than Oct. 28th.

Births, Marriages, and Deaths.

BIRTHS.

BOLTON.—On Sept. 30th, at Bedford Lodge, Belsize-grove, the wife of Dr. A. O. Bolton, of Leighton Buzzard, of a son.

GRAHAM.—On Sept. 20th, at Trimulgherry, India, to Major and Mrs. W. T. Graham, R.A.M.C.—a son.

ORAM.—On Oct. 4th, at Lee-terrace, Blackheath, the wife of E. H. B. Oram, F.R.C.S., of a son.

ORMEROD.—On Oct. 1st, 1925, to Mary (*née* Burton), the wife of Frank Cunliffe Ormerod, of 13, Welbeck-street, W. 1, and 39, Queensborough-terrace, W. 2.—a son.

MARRIAGES.

Colville—Ball.—On Sept. 30th, at Havant, Hants, Oliver Colville, M.D., of Bedlington, Northumberland, and Bath, to Kathleen, only daughter of Mr. and Mrs. Ernest Ball, of St. Margaret's, Drayton, Cosham, Hants.

Cuthbert—Taylor.—On Oct. 5th, at All Saints', Shooters' Hill, Captain Edmund Sheppard Cuthbert, R.A.M.C., to Annie Rose, elder daughter of Captain R. C. Taylor, R.H.A., (retd.), and Mrs. Taylor, of Plumstead.

Foote—Adair.—On Sept. 25th, at Holy Trinity Church, Sloane-street, S.W., Robert Rowden Foote, M.R.C.S., L.R.C.P. Lond., to Maureen, only daughter of Mr. and Mrs. G. E. R. Adair, Wellesley House, Lower Sloane-street.

Hammond-Williams—Barton.—On Oct. 3rd, at the Parish Church of St. Mary, Acton, Douglas Shepherd Hammond-Williams, L.D.S. R.C.S. Eng., to Violet Nellie, youngest daughter of Mr. and Mrs. Edward A. Barton, of The Cottage, Woodhurst-road, Acton, and Laleham-on-Thames.

Hilton—Hill.—On Sept. 16th, Reginald Hilton, M.B., B.Ch., M.R.C.P., to Gwenda Hill, M.B., B.S.

Hudson—Allard.—On Oct. 2nd, at All Saints' Church, Whitstable, Frank Hudson, F.R.C.S., to Christabel, eldest daughter of C. B. Allard, Tankerton, Kent, grand-daughter of the late W. Allard, F.R.C.S., Tewkesbury.

Mines—Gordon.—On Sept. 28th, at Sidbury Parish Church, Albert Gordon Austin Mines, R.A.M.C., to Marion Alice Gordon, youngest daughter of the late Alexander Hamilton Miller Haven Gordon, of Delamont, Killyleigh, Co. Down, Ireland, and Mrs. Gordon, of Ladymead, Sidford, Devon.

Prowse—Crellin.—On Sept. 29th, at St. Mary's, Leigh Woods, David Crawford Prowse, M.B., M.R.C.S., to Dorothy Emily Crellin, M.B., M.R.C.S., younger daughter of the late John C. Crellin and Mrs. Crellin, of West Mall, Clifton (late of Hoylake, Cheshire).

Rogers—Glasbrook.—On Oct. 2nd, at All Souls', Langham-place, London, Herbert Rogers, M.B., Ch.B., to Margaret Iris, eldest daughter of Mr. and Mrs. David N. Glasbrook, of Bryn-y-Mor, Swansea.

DEATHS.

Hunt.—On Sept. 30th in London, Edmund Langley Hunt, C.M.G., L.R.C.S. & P.I., Superintending Medical Officer Jamaica. Funeral took place at Golders Green Crematorium on Oct. 3rd.

Manby.—On Sept. 29th, at East Rudham, Norfolk, Sir Alan Reeve Manby, K.C.V.O., F.R.C.S., M.D., aged 77.

Stares.—On Sept. 28th, at The Limes, Swanley, Kent, Charles Lindsay Baker Stares, J.P., M.R.C.S. Eng., L.R.C.P. Lond.

Vernon.—On Feb. 12th, 1925, suddenly, at Montego Bay, Jamaica, Alexander Apfell Vernon, M.D. New York, M.R.C.S. Eng., L.R.C.P. Lond., aged 50 years.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

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Notes, Comments, and Abstracts.

THE LONDON MEDICAL EXHIBITION: A REPETITION IN LIVERPOOL.

Both in scope and variety the London Medical Exhibition which was opened at the Central Hall, Westminster, on Oct. 5th and which closes to-day (Friday, Oct. 9th), is perhaps the most important of the many that have been organised since 1905. The attendance has been large; it has included appreciative visitors from London, the home counties, and the Midlands, and a fair number of medical men from overseas at present visiting this country. The success of these exhibitions is shown by the demand for a similar display more conveniently situated for medical men in the North of England, and to meet this demand a medical exhibition, similar to the London one, will be opened at the Philharmonic Hall, Liverpool, on Tuesday, Nov. 24th, for four days, closing on Nov. 27th. The London office of this new enterprise is the British and Colonial Druggist, Ltd., 194–200, Bishopsgate, E.C. At the London exhibition practically every branch of medical treatment receives recognition in some form, and both drugs and surgical instruments in their latest adaptation to progressive medicine and surgery find a place. Particularly noticeable is the large number of iodine and liquid paraffin preparations; the popularity of electro-therapeutic treatment is indicated by a variety of apparatus, and in this category may be included light treatment by means of quartz and other lamps. Another prominent feature of the exhibition is the obvious effort of the manufacturers of drugs to present them in a form pleasing to the eye as well as to the taste. The organisers are certainly to be congratulated upon the success of the exhibition no less than upon the production of the "London Medical Brochure," which is given away to visitors. This is a list of special medicines with their composition, therapeutic uses, and the name of the maker or supplier, and forms a ready guide for medical men who wish to try some of the newer remedies for particular diseases. A detailed account of the exhibition will appear in our columns next week.

INTERNATIONAL HEALTH ORGANISATIONS.

The prevention of disease as an international problem is now accepted as a commonplace, but international health organisations are of comparatively recent growth, and even the word international, now so familiar, only dates from 1780 when it was coined by Jeremy Bentham. International organisations trace their origin in the first place probably to trade, soon followed by intellectual and artistic exchange between nations, and they were also undoubtedly influenced by widespread religious interests as seen in the early Church Councils and in the Crusades. The earliest international congresses were of a scientific nature, the first of these being held in Germany in 1823, and it was not until 1864 that an association between nations for a common end took shape in the International Geodesic Association, which had as its object the accurate measurement of the earth. In 1851 the first international sanitary conference was held in Paris and prepared a draft convention which was never ratified, but from that time forwards the gradual development of the international aspect of public health took place until at the present day there are three important organisations concerned with this—the Office International d'Hygiène Publique, the Pan-American Sanitary Bureau of the American Republics, and the Health Organisation of the League of Nations, including both the Health Committee and certain divisions of the International Labour Office. A recent issue of Public Health Reports[1] from Washington contains an historical review of these organisations and traces their evolution up to their present-day established position.

After the First International Sanitary Conference of 1851, succeeding conferences were held in a spasmodic fashion until, in 1903, the Italian Government proposed a conference in Paris for the purpose of collecting into one agreement the existing conventions, and it was at this meeting that the Office International d'Hygiène Publique was created. An agreement between the powers was drawn up and signed at Rome in 1907, providing for the establishment of headquarters, funds, and staff, for the issuing of a monthly bulletin, and for a permanent committee which should meet once a year. The permanent committee met first in April, 1909, and but for the years of the war has continued to hold regular sessions each year. It has carried out important work; for example, with regard to plague, tuberculosis, Malta fever, water-supplies, and the standardisation of serums and other biological products, while the monthly bulletin, published without interruption since January, 1909, contains valuable epidemiological reports and tables, abstracts of articles on subjects pertaining to public health, and bibliographies on similar subjects.

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[1] Washington, Public Health Reports, xl., No. 34, August 21st, 1925.

By the Covenant of the League of Nations the authority was given for an international health organisation under the direction of the League. The Office International d'Hygiène Publique found itself unable to participate in the activities of the League owing to certain important provisions in its organic by-laws, but to avoid the difficulties of a dual organisation an arrangement was made in 1923 whereby the International Office retains its regulations, powers, and its seat in Paris, and acts as the Consultative Council to the Health Organisation of the League, which consists in addition of a permanent health committee and a health section of the secretariat with its headquarters at Geneva. The League by means of this organisation has carried out a great amount of work, including, for example, the fighting of the typhus fever epidemic in Poland and Russia, an epidemic commission in Greece, and other preventive work in the Near East, while the standardisation of biological products and the interchange of public health officials by providing courses of "travel studies" are other important developments. The health section of the Secretariat of the League, under the direction of Dr. Ludwik Rajchman, is the executive organ of the Health Committee, and besides the work described above is responsible for issuing valuable epidemiological reports. The International Labour Office, an autonomous organisation within the League of Nations, has a division of industrial hygiene which has collected and published much information in regard to this subject, and has set up certain advisory committees, one of which on anthrax has made valuable contributions to the problem of combating this disease. Mention may here be made of the League of Red Cross Societies, an association of National Red Cross Societies founded in 1919, and now comprising 54 members, which maintains a permanent secretariat in Paris and does valuable work in close coöperation with the official international organisations by distributing propaganda on health matters throughout the world as well as carrying out courses in London for nurses from many different countries. It possesses a very fine collection of pamphlets, posters, booklets, and films on health matters, and forms an important link between the official bodies and the public.

The Pan-American Sanitary Bureau is the outgrowth of a series of international conferences of North and South American States which date back over a hundred years, and largely with a view to combating the ravages of such diseases as cholera and yellow fever at the sea ports the United States summoned an international conference to meet at Washington in 1881. This was followed in 1889 by a conference of American States at which every American Republic was represented, and where, among other questions, the subject of ship sanitation and quarantine was discussed. At the second conference of the American States in 1901–02 the International Sanitary Bureau of the American Republics was created, its name being changed in 1923 to the Pan-American Sanitary Bureau. Since its foundation this bureau, which is a permanent executive board with its headquarters at Washington, has been responsible for collecting and distributing information on public health matters, for giving expert assistance in the fighting of outbreaks of epidemic disorders, and generally carrying out the resolutions of the seven international conferences of the American States which it has organised since 1902.

COLONIAL HEALTH REPORTS.

Ashanti.

IN his report for 1923–24 Mr. John Maxwell, C.M.G., the Chief Commissioner, states that there were four deaths and five cases of invaliding of Europeans during the year under review, two of the deaths and two of the cases of invaliding being due to blackwater fever. The admissions to the European Hospital numbered 113, as compared with 194 during the previous year and 172 for 1921. The admissions to the Native Hospital numbered 1972, whilst 15,564 out-patients were treated during the year. These cases were of the usual kind, venereal disease, yaws, pulmonary affections, ulcer, and malaria being the most common. There was no epidemic throughout the year, and the health of the inhabitants was generally good. The sanitation of the towns (except Kumasi) and villages was satisfactory. With the opening up of the country by motor roads new villages adjacent to the roads have been built and the old villages distant from the roads have been deserted. This forward movement is particularly noticeable in the western province and is an extremely satisfactory condition of affairs. It indicates greater trust by the Ashanti in the protection of life and property which the administration affords, and also indicates that the Ashanti is fully alive to the greater possibilities of disposing of his products to travellers and others. These new villages, with the help of the political and sanitary officers, are all carefully laid out with fine broad streets, open spaces, and sanitary utilities. Kumasi, Obuasi, Bekwai, Juaso, Kintampo, and Sunyani are the principal towns, and the sanitation of these towns is under European and African officers. The population at the census of 1921 was 406,193, that of Kumasi, the chief town, at the end of the year being approximately 27,000. The town limits are a radius of one and a half miles from the fort and there are buildings scattered all over this area. The usual preventive measures were taken against insect-borne disease, including malaria, yellow fever, filariasis, infectious and epidemic diseases. There was, unfortunately, no improvement in the quality of the Kumasi water-supply, which is badly polluted by the presence of *B. coli.* There were no cases of cerebro-spinal meningitis, cholera, enteric fever, small-pox, or plague. The rainfall recorded at Kumasi during the year was 59·240 inches. Investigations have been made at Chebbi, near Nsuta, as to its suitability for a site for a sanatorium for the Gold Coast in accordance with the Secretary of State's suggestion. The situation is ideal and water-supply appears to be good and plentiful. It is 1200 feet above sea-level and is within two hours by motor from Kumasi, the road being good, except for the last three miles.

Grenada.

Mr. Herbert Ferguson, Colonial Secretary, in his annual report, states that the death-rate for 1923 (16·6 per 1000) is the lowest recorded in the annals of the colony. The number of deaths from dysentery decreased from 83 to 33, and from diarrhœa and enteritis from 329 to 283. Deaths from malaria were also fewer, being 74, as compared with 83 in the previous year. The population at the last census was 66,302. The Registrar-General points out "that the low death-rate coincided with a year of deficient rainfall, the latter having been 55·72 inches at Richmond Hill in St. George's, as compared with the average of 74·38 inches for the past 30 years. An examination of death-rate in relation to volume of rainfall over the past 20 years does not reveal any striking relativity between the two. As a rule a low rate of rainfall is supposed to accompany a decrease in the death-rate, but this is not invariably the case. A prolonged dry season followed by a short spell of heavy rains often leads to an outbreak of dysentery, diarrhœa, and enteritis, and thus, while the annual rainfall may be low, a corresponding reduction in the death-rate does not always follow. Last year there was no distinct spell of dry season, nor of heavy rainfall at any time, the latter being well distributed over each month. It is this equable distribution of rainfall throughout the year that has contributed to the low mortality."

Grenada, situated in the extreme south of the Caribbean Sea, is the nearest British island to the mainland of South America, with the exception of Trinidad and Tobago. The island is about 21 miles in length and about 12 miles in its greatest breadth. Its area is about 120 square miles, but including Carriacou, an island in the north, the area of the colony is 133 square miles. Grenada is mountainous and well watered by streams. St. George's Harbour, land-locked and deep-watered, is one of the most beautiful in the West Indies. There are two small lakes formed in extinct craters, one called the Grand Etang, being situated near the centre of the island 1740 feet above sea-level, while the other, Lake Antoine, is near the sea on the eastern coast. A sanatorium is established near the former. The climate can be classed as excellent, especially from December to May, when it is delightful. The range of temperature is small and tends to make the climate equable and healthy. The thermometer seldom reaches 90° F. in the shade or drops below 70°.

St. Helena.

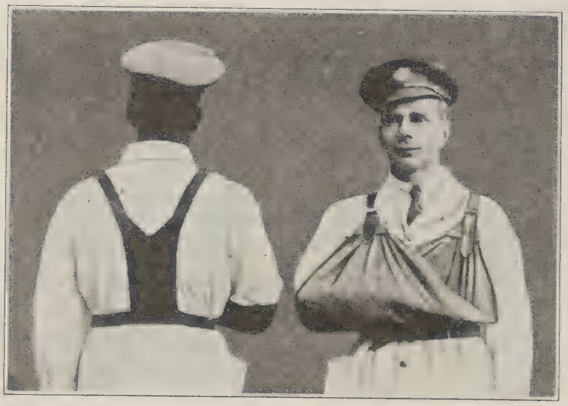
In his annual report on the affairs of this colony the Governor mentions that the civil population on Dec. 31st, 1924, was estimated at 3703, an increase of 43 over that of the previous year. The death-rate was 10·23 per 1000, compared with 7·66 in 1923. The number of births was 106 (not including four stillborn), as against 114 (and two stillborn) in the preceding year. The infant mortality was large, 11 out of the 38 deaths being under the age of 1 year. No specific reason can be assigned for this, the deaths being all from what might be termed natural causes in very young children. A mild epidemic of influenza was prevalent in the months of February and March, but there was no appreciable rise in the death-rate on that account. On the whole, the general health of the colony during the year was good; 169 persons were admitted to the hospital, being eight less than in the previous year. There were three deaths. The average number of indoor patients was ten. The mean temperature was 60·3° F., as compared with 62·0° in 1923. The total rainfall recorded at Hutts Gate for the year was 33·160 inches as against 45·740 in 1923.

THE NEWSVENDORS' BENEVOLENT AND PROVIDENT INSTITUTION.

THE annual dinner will be held at the Hotel Cecil, London, on Nov. 3rd, and Mr. Frederick Lawson, writing from the office of the *Daily Telegraph*, points out that the newsvendor works early and late that the public may be provided with their newspapers, while it is the purpose of the institution to provide on their behalf for pensions in old age or incapacity, or grants and other assistance to members, their widows, and orphans who may be in temporary difficulties. "Many newsvendors," he writes, "have only too little opportunity for providing for illness or old age, and the institution gives to those members of the public to whom the newsvendors render a daily service an opportunity to give their thanks in return." The funds of the Newsvendors' Institution, which was established in 1839, are carefully administered. There are at present 68 pensioners, whose welfare is constantly borne in mind. Sick parents are sent to convalescent homes, orphan children are cared for in selected institutions, and financial help is given in cases of need. Mr. Lawson is chairman for the year, and will be glad of offers from ladies and gentlemen willing to assist as stewards.

THE "EUPHOROS" SELF-ADJUSTING ARM-SLING.

IN appearance this sling is similar to the common form of support constructed from a folded handkerchief, but instead of being suspended from the back of the neck, the "Euphoros" is kept in position by straps passing over the shoulders and attached to a waistband, as is clearly shown in the accompanying illustrations, and the patient is thus relieved of any sense of carrying weight. One of the illustrations also shows that the back piece is curved so as to avoid the shoulder-blades, and this part of the sling, together with the belt, may be worn either under or over the coat. The sling is attached by buckles to the bands passing over the shoulders, thus making adjustment quite easy to the wearer; and a gusset at the elbow obviates the necessity for safety-pins and gives greater freedom to the arm. The "Euphoros," adaptable to the right or left arm, is made of a strong, light and durable black material, and is extremely comfortable to wear. Its merits certainly commend it, and it might well find a place in the emergency cupboard of every household. Messrs. Squire and Son, Ltd., 413, Oxford-street, London, are the agents for its sale.



The "Euphoros."

A FAMOUS SANITARY COMPANY.

THIS bright little book[1] tells how the City of London Sanitary Company was formed in 1908, of its regular service thereafter in autumn manœuvres, and of its personnel when the war broke out. On August 4th, 1914, there were two officers and 59 N.C.O.'s and men, and the numbers steadily grew to 80 officers and 1500 men overseas. Only men with sanitary knowledge or good education were taken, many of them obtained by advertisement in sanitary journals; there were sanitary inspectors, surveyors, builders' foremen, linguists, graduates in science, and others. Headquarters were at Chelsea, and scientific institutions in the neighbourhood freely helped. The men were taught about bacteriology, the causes of disease, the disposal of night soil, disinfection, the care of water and meat, and when trained they were fit to be N.C.O.'s. They were also taught to cook. In one respect they had good fortune, for their Q.M.S. was a professional caterer, and fed them well for a shilling a day, so that the mess fund, started by a gratuity of £50, got them equipment for instruction and recreation, a company magazine, rail tickets to go out of London for route marches, and ultimately, when the company was broken up, £500 to endow a memorial bed at the Westminster Hospital. After November, 1914, every British division had a sanitary section with it. The first duties overseas were supervision of the units, themselves responsible for the sanitation of their areas, but needing advice. The duty of the sections was to point out deficiencies, their privilege to help in putting them right, and tact generally got this done smoothly. Water analysis and chlorination, disinfection, baths and washhouses were special activities of the sections, nuisances and flies their great preoccupations. In 1917 men of no education were drafted into the company, but many of them proved to be useless or worse. There is a story of an infantry private who drank unapproved water, having first made German prisoners drink it, "and ye see they're all right." The book should be read by officers of sanitary companies and by all who expect to join them on mobilisation.

SUGAR AND ATHLETICS: A SHAKSPEARIAN ALLUSION.

To the Editor of THE LANCET.

SIR,—The Harvard Marathonians, in your leading article of Sept. 19th, found that eating candies was very reviving when exhaustion began to appear. They might have remembered Prince Hal's remark to Falstaff (*King Henry IV.*, Part I., Act iii., Scene 3): "If there were anything in thy pocket but tavern-reckonings, memorandums of bawdy-houses, and one poor penny-worth of sugar-candy *to make thee long-winded.*"—I am, Sir, yours faithfully,

M.A., B.Sc. St. And.

NURSERY PSYCHOLOGY.

THE National League for Health, Maternity and Child Welfare (117, Piccadilly) has issued a pamphlet entitled, "Every-day Psychology in the Nursery," being a selection from courses of lectures recently delivered by physicians and others under the auspices of the National Society of Day Nurseries. The six lectures reprinted in this book deal with various psychological subjects, including the use and abuse of suggestion with children, sex education, the part played by diet in the psychology of the child, and the children's evening hour. Each of these essays is good and practical, and should prove stimulating to all engaged in the training and care of children.

A NATIONAL INDICTMENT.[1]

"THE future is for the nations who are chaste." This saying of Tom Mann's is the concluding sentence in the book before us, an authorised translation of Mr. Paul Bureau's "Indiscipline des Moeurs," and it adequately sums up the author's beliefs. In an essentially scientific manner Mr. Bureau analyses the first of the three causes of what he terms the "great sickness" of France—namely, sexual licence, the others being alcoholic intemperance and lack of an efficient central governing and representative authority. He deals with much of the disagreeable side of life as it exists in that country, and it is particularly the attitude of the average man to sexual matters that he first attacks. For example, the attitude of what we should term a decent class family to the "amorous amusements of the young man" is that his enjoyment is innocent and free from moral blame "so long as the four accidents which may follow imprudent conduct are avoided: venereal disease, prosecution in the high court, an action for damages before civil courts on the charge of seduction or paternity." With the conduct of married people Mr. Bureau is no less severe in his condemnation, and although surprisingly influenced by much of the teaching of Malthus he is nevertheless wholeheartedly out against "neo-Malthusianism." The book, which Dr. Mary Scharlieb in an introduction describes as "at once terrible and fascinating," should certainly be studied by those interested in social and economic problems. The author's patriotism and his enthusiasm are unquestionable, and he tells his country frankly that if she "does not reform her habits not only will her glorious victory bring her no benefit, but, on the contrary, the war will have accelerated yet more swiftly the hour of her fall and will bring her nearer the hour of her final ruin." Hard words, but those who know France at all intimately realise that such words contain more than much truth, and the author's masterly analysis of the problem of sexual morality is not without interest to this country as well. We live in a glass house, as readers of the police news and the records of *causes célèbres* show.

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[1] The History of the First London (City of London) Sanitary Company, R.A.M.C. (T.) Edited by G. W. Foster, The Laurels, North Kelsey, Lincoln. With ten illustrations. Pp. 114. 2*s.* 6*d.*

[1] Towards Moral Bankruptcy. By Paul Bureau. With an Introduction by Mary Scharlieb, C.B.E., M.D., M.S. Lond. London: Constable and Company. 1925. Pp. 546. 16*s.*

Introductory Address

ON

RESEARCH IN THE MEDICAL SERVICES.

Delivered to the War Section of the Royal Society of Medicine on Oct. 12th, 1925,

BY LIEUT.-GENERAL SIR WILLIAM B. LEISHMAN,
K.C.B., K.C.M.G., F.R.C.P., F.R.S.,
DIRECTOR-GENERAL, A.M.S.; PRESIDENT OF THE SECTION.

AT the outset it is my purpose, if I can, to remove from your minds the impression that research is of necessity an esoteric matter, confined to mysterious laboratories, and that it can be carried out only by professors and specialists who have given years of work to their subject, who are a "peculiar folk," and talk in a tongue "not understanded of the people." It is true that much experimental inquiry demands expert knowledge, special equipment, and comes within the opportunity of comparatively few of us, but I prefer to give to the word research a much wider significance and to take it to cover any means by which we, of set purpose and on a deliberate plan, strive to add to the existing knowledge of the cause, the prevention, and the treatment of disease. I have on more than one occasion spoken on this subject and have urged in connexion with it a far closer collaboration for this purpose between clinician and specialist than exists at present.

THE PRESENT POSITION.

Let us examine in some detail our position as medical officers of the fighting services *vis-à-vis* this question of research. It is not my intention to dwell on the admirable research work which is in continual progress in our respective colleges and laboratories, nor to point out the moral of the incalculable benefits which the Services have enjoyed as a result of much of that work. This would leave no time to deal with anything else, and I prefer to speak of the present, and still more of the future, rather than of the past.

I am bound to admit that the present moment does not appear to be an ideal one for suggesting that, with our diminished personnels, over-worked officers should voluntarily add to their heavy work; but, after all, we are only passing through a period of depression, and such periods, familiar enough to those of us with long service, pass and have usually been followed by conditions better than those that preceded the negative phase.

Be that as it may, I know I am not exceptional in holding as a firm belief that there is a profound difference between work which, however conscientious and good, is more or less of a routine, and that which is varied and which brings with it continual new interests. Anything in the nature of research, understood in the broad sense I mentioned just now, belongs definitely to the latter category, and has the further great attraction that it brings us into that closer intellectual sympathy with our colleagues which is one of the results of the pursuit of a common purpose.

Advantages of the Services.

Let us now look for a moment at the very exceptional facilities and opportunities which we of the Services possess; they are indubitable and, I believe, far greater than those enjoyed by the great majority of our confrères in civil life. First, and most important, our material. Whether sailors, soldiers, or airmen, those of whom we have the honour to be in medical charge become, if we wish, our friends and comrades throughout their service; where they go we go, and their health and physical well-being is not only our charge but is to us an open book throughout their service, wherein we may read, and perhaps even write, as we will. From their examination as recruits till they leave the colours their physical standards and their medical history are recorded and they are under our daily supervision. What would not our civil brethren often give for such an intimate knowledge of the past history of a patient! There is nothing like it, except perhaps in some schools and institutions and in relation to some of the notifiable diseases such as tuberculosis. The fact that the men, like ourselves, are subject to discipline brings in another element of great value, inasmuch as it renders possible such things as systematic or periodical examinations and the employment of uniform standards of procedure, which are, as a rule, totally impracticable elsewhere.

As to the opportunities for medical research in connexion with this exceptional material, there is no need for me to remind my brother officers of both the abundance and the variety of the morbid conditions which come under our observation in officers and men and among their wives and families. This is less appreciated, unfortunately, by many outside the Services where there are still many misconceptions as to both the volume and the nature of our work, and it is not rare for us to read, or to hear, that our opportunities are meagre, that we see but the commoner ailments to which healthy young manhood is liable, and that the bulk of our experience is in the treatment of minor complaints and venereal diseases. This was not true even when I joined the Army in 1887, and nowadays, in that Service, the volume and importance of the medical and surgical work compares favourably with that of all but the largest of the metropolitan or provincial hospitals. The change of policy which has resulted in the concentration of the troops in a smaller number of large stations has been followed naturally by a similar concentration of the medical organisation—greatly to the benefit of the Army, the taxpayer, and ourselves. I am, naturally, not so intimate with the situation in the Navy, the Air Force, and the Indian Medical Service; but I have good reason to know that they are in most matters as favourably situated as ourselves, while the records of past meetings of this Section bear abundant evidence to the good use they make of their opportunities.

Medical and surgical material, then, is abundant and varied, both at home and abroad, and we are most favourably placed to observe our cases from start to finish and, if we wish, to follow them up afterwards.

The Value of Organisation.

Turning to another side, we can readily make use of our respective organisations for the employment of the technical aids to diagnosis and treatment with which medical science has been so greatly enriched in the last 30 years; and one acknowledges gratefully that we are able to maintain our equipment for theatre and laboratory in a condition well abreast of all modern requirements. Whatever tests may be considered as helpful to diagnosis or as accessory to treatment are readily available and, if the specialist and his tools cannot be brought to the patient, the patient, if necessary, is transferred to the hospital where he will find the pathologist, the radiologist, or other expert whose skill is needed. Further, should we feel that our own resources in skill or experience are insufficient in a difficult case we are indeed fortunate at home in being able to call upon one of our distinguished consultants, whose ready and valuable help it is impossible to acknowledge adequately. We are thus able, in all but the most isolated stations at home or abroad, to investigate fully all our cases, to observe their progress accurately, and to make permanent records in relation to any facts of importance. These are great assets for any medical man, and, if we do not benefit by them to the full, the fault is our own.

Such, then, being the present position as regards material and facilities in the Army Medical Service, and also, I am confident, in the sister Services, let us turn to the use which we are making, or may make, of them to further medical science by observation and research.

THE OUTLOOK FOR THE FUTURE.

As to the past, each Service has a record of research of which it has every reason to be proud, and even our youngest sister has lost no time in making her permanent marks on medical progress. As I have said, I do not intend to enumerate even the more important and outstanding of these researches, but will only point out that, for the most part, they were the work of men who had had the advantage of special training in some line and who enjoyed special facilities, either in the way of exceptional access to fruitful material or in the use of well-equipped laboratories. At the same time, this was far from being the case in all instances, especially in the past when specialism and laboratories were rare, and many most valuable contributions to knowledge were made by men who had to rely solely on themselves and had to create and utilise their own opportunities.

What would not many of our forbears have given to profit by the benefits which we have inherited? Apart from the volume of new knowledge which lies to our hand, we all enjoy the further inestimable privilege of going through an admirable post-graduate course, just at the moment in our professional life when we can benefit by it best; that is, when we are old enough to have acquired a wide experience of men and of other lands and are still young enough to retain energy and ambition. Whether or no our professional predilections are sufficiently defined to lead us to seek for further special instruction in a particular branch, we are all of us, at the least, given the chance of bringing ourselves well up to date in our rapidly moving profession.

The Opportunities.

The point which I now wish to make is this. In my view, everyone who has reached this stage in his Service career is well equipped to make valuable original observations on many lines of professional work, either alone or with the readily available help of his specialist comrades. Not that I would for a moment suggest that such work need be deferred till then, but one recalls how, in one's earlier years, one feared to slip up by publishing observations or views which, through our inexperience, might either prove not to be novel or to have been inadequately controlled and documented.

Apart from the desirability of attempting such research work for its own sake and for the general advancement of our profession, there is, I imagine, little need for me to emphasise its value to the individual. Not only would it make his professional life infinitely more interesting, but there is always the chance that a particular investigation might end in bringing to light something of great importance, one result of which would be, if justice is done, as it usually is in the end, that the investigator's name would become associated with the observation and he would find he had taken a definite step forward out of the class of "also ran." I would, however, warn anyone who, on the strength of this advice, felt inclined to try his wings in this direction that two qualities are essential to any chance of success—absolute honesty and infinite patience. One needs really something of the qualifications of the fly-fisher, for whom there is such hope in every cast that it will carry him happily through a blank day, leaving him with cheerful anticipations of the morrow.

One other word of counsel. Much careful and good observational work fails to obtain full acceptance and credit for lack of record of some observations or tests which a critic might consider essential to the acceptance of the conclusions. In such cases collaboration with a specialist colleague is most desirable, and is most valuable to each.

INDIVIDUAL RESEARCH: PLANNING THE WORK.

Let us now consider for a few moments what kind of inquiries might be set about and in what manner the material which lies to our hand might be utilised. You will, perhaps, forgive me the presumption of attempting to advise beginners in this matter on the slender ground of having been, in my past life, a specialist in one branch. Putting myself, as far as I can, in the position of a young officer who has not as yet attempted anything of this kind, I should begin by asking myself "In what line of professional work am I most interested and would most wish to become expert?" The answer, I am sure, would be clear and prompt. I should then sit down to think over the many branches of that subject, finally selecting one or two of them for a closer scrutiny. I should lay special stress on the cases which, in my own experience, had puzzled me and in which, for example, I had felt unsatisfied as to the current explanations of their ætiology or in which the treatment in common use had proved, in my hands, unsatisfactory. It would not be long, I fancy, before a certain number of such instances occurred to one. Of these I should select one or two and proceed to soak myself in the recent literature of the subject, incidentally subscribing to some of the technical journals dealing with it. One would soon realise that many others had encountered the same difficulties and would find oneself stimulated by their new points of view and their own conclusions. By degrees you would, I am sure, find yourself becoming more and more critical of these conclusions, so often expressed with dogmatic confidence, and you would begin to ask yourself "Why does this fail to convince me?" or "How am I to reconcile this result with what has been recorded by X, Y, or Z?" Next in order comes the stage at which one begins to think "Would it not be possible to settle the point if I were to do—what?" If one accepts the mental challenge *that* is the starting-point of a specific piece of investigation, and one must then begin to plan the campaign. Assuring oneself, in the first place, that sufficient material is already available, or can be made available by a little private organisation, you ask "How can I make and record these observations in such a way that a clear-cut answer may be obtained to the questions I have asked myself?" In this it must be kept clearly in mind that you have to convince not yourself only but others who, when they come to read your work, will be quick to notice the absence of certain relevant details or the inadequacy of your "controls." It is impossible to take too much trouble over this planning of the inquiry, for, if every fallacy is not thought of beforehand, and guarded against as far as possible, one may waste much effort and have to start afresh.

Unexpected difficulties, failures, interruptions, are the daily bread of the inquirer, but, if met with cheerful philosophy, and still more if one is wise enough to have prepared more than one string for one's experimental bow, one may confidently anticipate reaching a result worth communicating to a society or journal and will have achieved an altogether new outlook on professional work and acquired that admirable thing a new interest in life.

The Fallow Fields.

Each man has different tastes and different aptitudes, but, in the extremely varied work which falls to us in the Medical Services it would indeed be strange if one could not find, within working distance, both the subject and the material for commencing such an inquiry as I have outlined. The tropical diseases are bristling with unsolved problems of ætiology, of treatment, and of prevention, and our opportunities in this line when on foreign service are unbounded. The Navy and the Air Force have, I take it, no lack of unsolved problems special to themselves, while in the Army there are a host of morbid conditions, some of them of first-grade military importance, in which our special facilities should give us a better chance of adding fresh knowledge or of clearing up difficulties than falls to the lot of most of our brethren. Again, to the considerable number of us to whom preventive medicine makes a stronger appeal than clinical work, the difficulty will be to choose one out of the hosts of problems which are presented to us by the rapid development of this subject.

COLLECTIVE RESEARCH.

So far I have been speaking of the individual inquirer who wishes to choose and follow up for himself a particular subject. Let me now say a word or two on collective research, a method of inquiry which so far has not been very widely used in the Services. By this is meant that a selected problem is investigated by a number of workers in different places who follow an agreed plan and conform to certain rigid standards as to the material and the methods to be employed. I have always thought that there were great possibilities in connexion with this method and that the conditions which should make for success were exceptionally favourable in the Medical Services. In the case of the Army our research organisation is readily adaptable to such a method, and a certain number of such investigations have been commenced since the Directorates of Pathology and Hygiene were created. As no doubt you are aware, in each of these subjects our Director has the advantage of a technical Advisory Board to which highly qualified civilian experts have been nominated. At their meetings subjects possibly suitable for such research are examined and, if one is chosen, the details of the inquiry, the methods to be employed, the mode of recording, collecting, and analysing the results, &c., are fully discussed and decided upon. The detailed plan is then communicated to the specialists in suitable commands, who get down to work on a common plan and using a common technique. I may enumerate a few of the pathological subjects so chosen, merely by way of illustration. (1) Influenza: the incidence of Pfeiffer's bacillus in the sick and in contacts, in the presence and in the absence of epidemics. The use of vaccines. (2) Latent sepsis: the value of vaccines prior to operation. (3) Catarrh: inquiry into bacteriology and prophylactic use of vaccines. (4) Typing of strains of diphtheria, cholera, and dysentery bacilli encountered in different countries. (5) The Schick reaction. (6) Parallel testing of the Sigma and Wassermann reactions. (7) Sand-fly fever.

These and other subjects have been explored in this collective way with, in some instances, substantial and encouraging results. I need hardly add, especially in the present difficult times, that we cannot command success; a particular epidemic may dwindle and disappear, or the other material may not be forthcoming in sufficient quantity. More frequently, however, it is one of these inevitable but irritating "exigencies of the Service" which has called a premature halt to a promising line of inquiry. I trust, however, that such efforts may not be abandoned since these collective inquiries are of value not only because they multiply results and tend to accelerate progress, but because the work and results of one observer form a useful check on those of another. Again, the mere fact that workers at a distance from one another are engaged on the same problem, and confronting the same difficulties, stimulates inter-communication and tends to break down that feeling of isolation which may sometimes become so irksome when one is working alone.

Its Value to Civil Medicine.

Before leaving this subject I would add that the method is capable of being of service to our civil brethren. There are many inquiries of medical, physiological, or sanitary importance which, because we are very busy people and because the problems are not perhaps of very direct military importance, we have not undertaken in the Services. At the same time, thanks to the favourable conditions of which I spoke at the beginning of my address, the Army, Navy, or Air Forces offer a field for their investigation under almost ideal conditions of observation and control. We have received, and continue to receive, so much ungrudging help and advice from our civil colleagues that we should, indeed, be ungrateful if we did not in return do everything that we could to assist them, whenever this is within our power. I am glad to know that something has already been done for them in this way, and I hope that we may be able to do more.

As regards research and observation of the more strictly clinical character I may add that, in the case of the Army, we have now the great advantage of the advice and controlling direction of our own consulting surgeon and consulting physician, and I am confident that their assistance and counsel would, if required, always be most readily available.

To conclude, I have been urging upon you that we should endeavour to secure a larger output of medical research from the Services, and have suggested that this is well within the power of many who have not so far embarked on it. I have done so for the following reasons: First, because it is our bounden duty to leave nothing undone which we can do to maintain or improve the health of the fighting forces, and to anticipate and prevent medical catastrophes in the future, not only by utilising new knowledge, but by adding to it. Second, because I know nothing better calculated to maintain a man's professional interests as well as to keep him out of the groove which may become so dangerously deep as our Service advances. Finally, it is only by contributing our full share to medical progress that we can hope to maintain the high prestige gained for our respective Services by those who have gone before us.

THE TOXIC EFFECTS OF LEAD ADMINISTERED INTRAVENOUSLY.*

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No one hitherto has had an opportunity of observing the toxic effects in the human subject of measured quantities of lead administered intravenously at known intervals. The accuracy of the observations about to be recounted makes them of some importance in any consideration of lead poisoning.

The injections, the effects of which we have been able to observe, have been given in the course of the treatment of malignant neoplasia, to which reference has already been made on previous occasions,[1] [2] and to which we shall again refer in the next and last paper of this series. In that paper, too, the more detailed procedures in connexion with the administration of lead will be recorded. Here it will be sufficient to give a general outline of the method. Some 200 patients in all have received injections.

METHOD OF PROCEDURE.

The actual form in which the lead has been administered has varied considerably from time to time, but the last 58 cases have been treated almost entirely by intravenous injections of metallic lead in colloidal form. In the early cases lead acetate, lead iodide in a partly colloidal state, and compounds of lead with thyroiodin and with hæmoglobin were used. Before treatment was commenced the blood of every case was carefully examined, and, as far as possible, full red and white cell and differential cell counts were made, and the blood-urea and sometimes blood-sugar were estimated. The urine was also exhaustively analysed, and in cases about which there was any doubt as to renal efficiency a urea-concentration test was performed. The hepatic efficiency was also examined, especially in cases in which there was involvement of the liver or jaundice due to extrinsic causes.

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* This investigation was undertaken on behalf of the Liverpool Cancer Research Committee.

[1] Bell, W. Blair: THE LANCET, 1922, ii., 1005.

[2] Ibid., 1924, i., 267.

During treatment all these methods of investigation were carried out whenever possible at intervals, either after each dose or after every few doses; especially was the blood examined for stippled red blood corpuscles, and the urine for albumin.

SYSTEMS AND ORGANS INVOLVED IN THE TOXIC EFFECTS OF LEAD.

The toxic effects of lead were noted on the following systems and organs: (1) the blood and blood-forming organs; (2) the alimentary system; (3) the nervous system, including the retina; (4) the kidneys; (5) the liver.

FACTORS CONCERNED IN THE PRODUCTION OF TOXIC EFFECTS.

Susceptibility of the Individual.—In general, it has been found that there is a great difference in individual tolerance to lead. Some patients showed signs of poisoning after quite small amounts had been administered, whilst others showed no untoward symptoms, although relatively large quantities had been given.

Body-weight.—It has appeared that the quantity necessary to produce toxic symptoms has varied with the body-weight of the patient; for example, a patient weighing 14 st. can usually tolerate more lead than a patient whose body-weight amounts to 7 or 8 st.

Age of the Patient.—It has also been held that there is an age factor in regard to the rapidity and intensity of the toxic effects of lead. We have found that relatively larger amounts could be given to patients between 55 and 65 years of age. It was formerly thought that young people tolerated lead better than older persons, but we have observed that a slightly higher average dose was necessary to produce toxic symptoms in patients between the ages mentioned than in younger patients.

Sex of the Patient.—It appears that the male is more tolerant than the female to the toxic effects of lead, as the following figures tend to demonstrate:—

Maximum and Minimum Amount of Pb required to Produce Toxic Symptoms: Average for all Ages.

Maximum.		*Minimum.*	
Males.	Females.	Males.	Females.
0·34 g.	0·29 g.	0·1 g.	0·04 g.

It must, however, be remembered that the average weight of men is greater than that of women.

Size of Malignant Growth.—It has, too, constantly been observed that there is a definite relation between the sizes of the growth to be treated and the amount of the lead which can be tolerated. A patient with a large sarcoma in the abdomen, for instance, would show no signs of lead poisoning until very considerable quantities had been given; whereas a patient with a small carcinoma of the œsophagus might show symptoms of poisoning when a relatively small amount had been administered. This relation between the size of the tumour and the amount of lead which is tolerated is impossible to demonstrate in figures, but it is a clinical fact which we have repeatedly observed. The importance of this will be discussed in another paper.

From what has been said in the preceding paragraphs it will be noticed that there are many factors concerned in the facility or difficulty with which lead poisoning may be produced in patients under treatment, and the various factors may interact so as to produce a complex arrangement that is impossible to estimate in any statistical manner, and it is this that makes treatment of malignant disease with lead extraordinarily difficult.

In our experience repeated small doses over a long period of time produce a dangerous cumulative effect. On the other hand, a few large doses administered at long intervals, considerably exceeding in total quantity of lead the amount given in small repeated doses, may, after the initial symptoms, leave no bad effect whatsoever.

EXCRETION OF LEAD.

As is well known, lead is but slowly excreted from the body. Our own observations indicate that malignant growths have the power of attracting lead, as a result of which we have found that the metal may become locked up in the tumour to an extent that is infinitely greater than occurs in the normal tissues of the body. We have also made observations on the relative excretory processes of the kidney and bowel. The urine and fæces were collected from two cases to which heavy initial doses of lead, amounting to 0·15 g. lead, had been administered in a single dose. In these cases it was found that the amount of lead excreted by the kidney was very large, and that only a small proportion appeared in the fæces.

TOXIC EFFECTS OF LEAD ON THE BLOOD AND BLOOD-FORMING ORGANS.

Red Cells.—The effects of lead on the red cells may be grouped as follows: (*a*) punctate basophilia; (*b*) polychromasia; (*c*) abnormal forms; (*d*) anisocytosis and poikilocytosis; and (*e*) anæmia.

Punctate Basophilia.—This is one of the earliest signs of lead poisoning. Some writers have stated that this phenomenon occurs in normal blood; we are, however, convinced that this is not so; it has only been found in a single case in our large series of blood examinations before lead has been administered. Undoubtedly, of course, it occurs in other pathological states, especially severe anæmias.

The appearance of the granules in the red cells, which give rise to the name "punctate basophilia," when seen in a blood film stained by Leishman's method, varies. In a well-marked example they are seen as bright blue stipples, numbering from 10 to 20 or even more, inside the red cells. The size of the blue stipple varies greatly; in some cases they are large, when the condition is known as "coarse basophilia"; in these instances the blue bodies are frequently arranged round the periphery of the cell. In other cases they resemble very fine dots scattered uniformly throughout the cell. In those cases in which there is polychromasia it is possible that the appearance is due to the granules having become broken up and diffused throughout the cell.

The actual number of stippled cells found in any film of blood is also subject to great variety. In a severe case of lead poisoning it is possible often to find an average of two stippled cells in each field under the 2 mm. objective; this, however, is rare. More commonly one stippled cell is found in every five or six fields. When the patient shows no other evidence of lead poisoning, it may be possible only to find one or two stippled cells after a prolonged search. The time of appearance of the stippled cells in the blood, after the intravenous administration of lead, depends on two factors: (*a*) the amount of lead given, and (*b*) the susceptibility of the patient from the many points of view already discussed. The smallest total amount of lead which produced stipples in our cases amounted to only 0·02 g. The earliest time at which stipples have been observed was three hours after a single injection amounting to 0·1 g. of lead. Generally, great variations have occurred both in the time of appearance of the stipples, and in the amount of lead necessary to produce them. No doubt susceptibility is a factor of importance in this matter.

The exact significance of stippling has never been determined with absolute precision. By some, it is considered to be a degenerative process, by others regenerative. Recent observers incline to the belief that the phenomenon is due to degeneration in the red cells owing to the fact that in the bone-marrow stippled cells are not found, and also because the phenomenon is associated with other pathological processes than lead poisoning. Moreover, it appears probable that the basophile stipples are of cytoplasmic origin, and are not, in fact, fragments of the nucleus of a normoblast. Indeed, we have frequently observed normoblasts containing a perfectly normal nucleus, in which coarse basophile stipples have been scattered in the cytoplasm around the periphery.

Polychromasia.—This is a very common phenomenon. It consists of a diffuse grey-blue coloration of the red cells stained by Leishman's method. Reference has been made to the suggestion that this is due to diffusion throughout the cell of the basophile stippling. It is possible, also, that it may be connected with changes in the constitution of the hæmoglobin in the red cells in the circumstances under consideration. We have observed this phenomenon frequently during the recovery of the patient from the effects of lead.

Abnormal Forms.—The presence of nucleated red corpuscles is not very uncommon. When present they are invariably associated with considerable anæmia and stippling of the red cells. Sometimes, as already mentioned, the nucleated red cells themselves contain stipples. From this it is obvious that degenerative processes associated with the formation of stipples, whatever they may be, can occur at a very early stage in the life of the red cell.

Anisocytosis and Poikilocytosis.—These phenomena have only been seen in association with more or less profound anæmia.

TABLE I.—*Summary of Patients Showing Changes in Red Blood Cells after the Administration of Pb.*

No. of patients (117 cases) : Males (M.), 31 ; females (F.), 86.
No. of patients showing—

1. Stippling of the red corpuscles (76 cases) ..	M.	24
	F.	52
2. Stippling of the red corpuscles + N.R.C. (24 cases)	M.	6
	F.	18
3. Polychromasia (14 cases)	M.	2
	F.	12
4. Stippling, nucleated reds, poikilocytosis (1 case)	F.	1
5. Stippling, nucleated reds, polychromasia (2 cases)	F.	2

Average amount of lead producing—	Stipples ..	0·14 g.
	Polychromasia ..	0·157 g.
	Nucleated reds ..	0·138 g.
Average time for production of—	Stipples ..	12 days.
	Polychromasia ..	13·4 days.

and in six of the most recent cases where nucleated red corpuscles appeared they were observed on the fifth day.

Anæmia.—Anæmia associated with chronic lead poisoning has long been observed, and, indeed, is a peculiar feature in the appearance of workpeople engaged in the lead trades. An eminent Recorder in the North Staffordshire area informed us that time and time again he was able to see in witnesses in his court evidence of the pallor produced by the absorption of lead. We have observed that although a considerable degree of anæmia, as shown by the hæmoglobin-content may be present, it is not invariable to find this associated with a decrease in the red cell count. We have, however, been able to observe all degrees of the condition, from the very mildest to that resembling the severest form of aplastic pernicious anæmia. Reductions of 750,000 red blood corpuscles after the administration intravenously of 0·2 g. of colloidal lead have been noted ; but blood cell counts as low as 3,400,000, and in one case even 1,400,000 have been seen.

As already indicated, far more striking than the diminution in the number of red blood corpuscles may be the reduction in the hæmoglobin-content. Table II., which consists of a few cases selected at random, will serve to illustrate these points.

It will be seen from Table II. that lead causes a relatively greater diminution in the hæmoglobin-content of the blood than in the number of red cells, although this is not invariable.

It follows that with such marked blood destruction all the symptoms of serious anæmia may be present—pallor of the skin and mucous membranes, headache, lassitude, and muscular weakness. In several of our patients a blood transfusion has been deemed necessary before treatment could be continued. In one case, however, in spite of repeated transfusions, very little benefit was obtained ; the lead seemed to have destroyed the blood-forming power of the bone-marrow.

TABLE II.—*Relation Between the Hb. Content and the R.b.c. and the Amount of Pb Administered.*

Case No.	Hb. percentage before treatment. (R.b.c. in millions.)	No. of inject.	Mass of Pb.	Hb. percentage after treatment. (R.b.c. in millions.)
			(g.)	
44	73 % ; r.b.c., 3,900.	5	0·18	50 % ; r.b.c., 3,660.
34	95 % ; r.b.c., 6,500.	11	0·48	65 % ; r.b.c., 3,950.
46	88 % ; r.b.c., 4,800.	5	0·35	82 % ; r.b.c., 4,625. 17 days later Hb. 70 % ; r.b.c. 4,050.
48	90 % ; r.b.c., 4,725.	4	0·24	82 % ; r.b.c., 3,950.
32	90 % ; r.b.c., 5,900.	11	0·53	52 % ; r.b.c., 3,050. 1 more inject., 10 c.cm. B.
			0·55	42 % ; r.b.c., 2,800. 1 more inject., 15 c.cm. B.
			0·58	36 % ; r.b.c., 2,340.
47	83 % ; r.b.c., 5,125.	13	0·43 0·05 } 0·48	55 % ; r.b.c., 4,950.
23	95 % ; r.b.c., 7,100.	37	0·83	50 % ; r.b.c., 4,400.
189	84 % ; r.b.c., 4,750.	2	0·2	59 % ; r.b.c., 4,000.
185	88 % ; r.b.c., 5,150.	3	0·3	75 % ; r.b.c., 3,850.

The rate of recovery from lead anæmia is, of course, a most interesting matter. In those cases, such as the one just described, who had submitted to frequently repeated small doses, recovery from the anæmia is rather a lengthy process. On the other hand, when patients have received several massive doses their recovery seems almost instantaneous.

The appearance of patients who have recovered from malignant disease under treatment, and are seen some months or years later, is that of the most vigorous health, without any abnormality of the blood cells. This point was emphasised by Dr. Adami recently at a review of our cases.

Another phenomenon to be observed with considerable frequency in blood films is the curious distribution of the pigment in the red cells. They assume the appearance of a lifebuoy with the red pigment around the periphery and an apparently clear zone in the centre ; this, of course, is a common phenomenon in anæmia, but as we have observed it so repeatedly we think it well to call attention to it.

BONE-MARROW.

We have examined the bone-marrow from animals which have died in the laboratory from lead poisoning. In no case have we seen stippled cells in this tissue ; indeed, like other observers, we are at a loss to say in what important particular this organ is affected. A lengthy investigation into the normal structure of this complex tissue has not enabled us to discover any important difference in the bone-marrow of healthy and lead-poisoned animals. That it is involved is undoubted, as the stage of inertia is reached in certain cases, to one of which we have referred, when the marrow seems to have given up the effort of throwing off normoblasts into the blood-stream.

CHANGES IN THE WHITE CELLS.

These may be grouped as follows : (*a*) leucocytosis, (*b*) relative lymphocytosis, (*c*) slight eosinophilia, (*d*) increase in other granular and streaky forms, and (*e*) leucopenia.

Leucocytosis.—Leucocytosis has, of course, been observed in association with malignant processes. Whether this is due to malignant growth is doubtful ; it seems likely that it may be the result of the infection that so often supervenes owing to autolytic processes in malignant neoplasms. Bearing this fact in mind, we have endeavoured carefully to observe whether the administration of lead alters the white cell count. When moderate-sized doses of lead have been given there has not been any very great increase in the number of white cells, 14,000 to 15,000 being the maximum number counted. In one instance, however, in which the patient received 0·2 g. lead in a single dose, leucocytosis was pronounced, the leucocyte count rising to 58,000 within 48 hours of the injection. It would appear that the earlier the counts are made after an injection, the greater likelihood there is of finding some degree of leucocytosis, for the number of white cells appears rapidly to diminish until the normal level is reached. (Table III.)

TABLE III.—*Showing Leucocytosis after Administration of Pb.*

Normal w.c. count: 6500.

Case.	No. of injects.	Mass of Pb.	Leucocyte count.	Time after commencing treatment.
		g.		
178	4	0·425	9,200	—
79	10	0·3	9,500	3 months.
174	1	0·2	52,500	2nd day.
91	4	0·16	14,500	—
105	20	0·57	12,000	—
138	2	0·019	15,000	—
146	3	0·0275	15,000	In 9 days.
	11	0·1825	42,000	—
149	6	0·086	12,000	1 month.
53	22	1·3	10,000	—
23	14	0·39	11,250	4 months.
168	4	0·11	15,000	—
23	3	0·025	13,750	6th day.
45	2	0·06	13,700	3rd day.

Relative Lymphocytosis.—Many observers have described relative lymphocytosis in association with lead poisoning. This, however, is by no means common, and very rarely does the percentage of lymphocytes exceed that of leucocytes. The counts in Table IV. are illustrative of a certain degree of lymphocytosis.

TABLE IV.

No. of w.b.c.	Poly-morph. (%).	Lymph. (%).	Large mono-nuclear cells (%).	Eosino-phile (%).	Mast. (%).
3,900	46′0	48·0	1·5	4·5	—
13,750	51·3	31·6	10·6	6·0	0·6
3,500	52·5	27·0	20·5	6·0	—

These, however, are somewhat unusual, and, taking an average of a large number of cases of differential counts, the percentage figures work out as follows: polymorphs, 63·6; lymphocytes, 20·7; large mononuclear cells, 7·4; eosinophiles, 3·7; mast cells, 1·5; and transitionals, 2·6.

It will be seen in lead poisoning that although a relative lymphocytosis may occur, yet it is not constant, and with almost all cases the relative numbers of leucocytes and lymphocytes are approximately normal. The slight increase in the eosinophile cells appears to be fairly common. In some instances this was very marked, and very many beautiful specimens were seen with large pink granules. On one occasion they equalled 8·3 per cent. of all the leucocytes present, and as high a ratio as 6 per cent. has been observed on several occasions. Yet, as is seen from the preceding table, taken on the general average of a large number of differential counts, the eosinophile cells represent only 3·7 per cent. of the total number of leucocytes—a slight but definite increase above the normal.

Increase in other Granular and Streaky Forms.—A number of curiously-streaked forms of white cells may be found. Many of the cells already described in the table were as large as polymorphs, and show a streaky cytoplasm. In size and shape they resemble the large hyaline cells. Occasionally there are found cells which closely resemble the ordinary polymorph, except that the granules, instead of staining pink with eosin, taken on a purple tinge.

Leucopenia.—Leucopenia is rarely seen. There seems a tendency rather that, if there be a change, it is towards leucocytosis. The particulars given in Table V. illustrate the possibility of this condition.

TABLE V.—*Showing Leucopenia.*

Case No.	W.c. count before treatment.	No. of injects.	Mass of Pb.	Leuco-penia.	Time.
			g.		
1	6,200	4	0·16	3,900	22 days.
14	8,120	24	0·2	6,250	7 months.
34	9,375	27	1·056	4,217	15 ,,
				5,000	17 ,,
150	10,625	16	0·674	3,500	11 ,,
		17	0·774	6,200	12 ,,

It will, however, be seen from the tables given that there is nothing specific or definite in regard to the change seen in the white cells as there is in the red cells.

THE ALIMENTARY SYSTEM.

The signs and symptoms discussed under this heading are the following: (1) Blue line on the gum edges; (2) nausea and vomiting; (3) intestinal colic; and (4) constipation and diarrhœa.

Blue Line on the Gum Edges.—In our experience this has been an uncommon occurrence; it has only been definitely observed in three cases. The explanation of the infrequency with which this phenomenon—so often considered a classical sign of lead poisoning—is observed is probably due to the method of administration. The blue line is, of course, due to the conversion of lead into lead-sulphide by the H_2S generated by decaying vegetable matter in the mouth. In these circumstances it is easily understood that if lead gained entrance to the system through the mouth, en route either to the lungs or the intestinal canal, the blue line on the gums would readily be produced; and these methods of admission are probably the common ones in industrial lead poisoning. In the three cases in which we have seen the blue line, lead had been administered over a relatively long period. When given in massive doses, as now, it is unlikely that it will be seen. It has always been stated that the blue line is persistent over a long period of time, but in our cases it disappeared in two or three weeks. This further illustrates the difference in the manner of production when the lead is administered intravenously from that of the more superficial staining observable in industrial lead poisoning.

Nausea and Vomiting.—It occasionally happens that a patient complains of intense nausea a few hours after the first or second injection of colloidal lead. It is difficult to believe that in these circumstances the symptom is due to lead alone; it is probable that the foreign proteins in the colloidal solution are responsible for the effect produced. The true nausea and vomiting due to lead generally occur later, after the administration of the metal; the nausea and vomiting may then be very bad, and may last for several days. Moreover, it is more persistent in some of the cases in which it has not been observed after the earlier doses; this indicates that the accumulation in the system of a certain amount of lead may be necessary in some patients before these symptoms are produced. Since we have given massive doses the cumulative effect has been well demonstrated. Before June, 1924, the solution used never contained more than 0·1 g. per cent. of lead; after that date we commenced to use a very strong solution containing 0·5 per cent. of lead. The average mass of lead required to produce vomiting with the weaker solution was 0·37 g., whereas with the stronger solution 0·22 g. was sufficient. This is in keeping with the production of other toxic symptoms; with the heavier doses they appear earlier, but, fortunately, disappear sooner; with the smaller doses we were inclined to continue blindly until very serious symptoms supervened—symptoms which could not well be relieved with any degree of certainty.

Lead sickness is a very distressing condition both for the patient and the doctor. As a rule, the patient can take no food whatsoever, and some of our patients have lived on water (if they did not reject that) and saline with glucose per rectum for several days. It is important, too, to bear in mind the fact that the patient may have gone home for some days before the vomiting occurs. In one case no symptoms supervened until three weeks after an injection, and the patient became seriously ill, and remained so for ten days. In such circumstances, of course, acidosis supervenes. We have known of no cases in which the patient has not eventually recovered, and, indeed, a few weeks later expressed themselves as feeling better than before. The susceptibility of the patient, to which we have already referred, plays a large part in the onset and severity of these symptoms.

Intestinal Colic.—Until the administration of the heavy doses of colloidal lead, we had never seen a case of lead colic. During the last year, however, it has been noted in a large proportion of all the cases treated; very often it is an accompaniment of the attacks of nausea and vomiting, which we have just discussed, and it usually comes on at the same time. The pains may be extremely severe and last several days; eventually, within a short time, they entirely disappear. It is extremely difficult to relieve the pain in severe attacks of intestinal colic; indeed, morphia and atropin are the only drugs we have found of service.

Constipation and Diarrhœa.—We have seen very few cases of constipation that could definitely be attributed to the effects of lead. So many patients are constipated in ordinary circumstances and rarely complain that the injections have made them more so. It is important, however, that patients under treatment should be closely questioned, and saline aperients should be given if constipation is present. We have not been able to connect this disorder with intestinal colic, just mentioned. Diarrhœa we have not seen, except in one or two cases after a very massive dose of lead, and then it appeared to be due to an anaphylactic shock produced by the proteins present in the solution rather than to the lead itself.

NERVOUS SYSTEM, INCLUDING THE RETINA.

The nervous phenomena produced by lead poisoning may be divided into two groups: (1) psychopathies, and (2) neuropathies.

In the early stages of our work we had three cases in which the patient became mentally deranged, no doubt due to what has been called lead cephalopathy—that is, to changes produced by lead in the brain.

In only one case were the symptoms serious. The patient was a male with an extensive carcinoma of the œsophagus; he became unmanageable, and apparently had delusions that he was being starved.

In another case, a man with extensive carcinoma of the floor of mouth, the patient became strange in his manner and taciturn; there was no violent outbreak, and the patient was sent home in a slightly improved condition so far as his mentality was concerned.

In the third, the patient, when at home in an interval between the administration of injections, committed suicide, but it was hardly fair to attribute this to the administration of lead, for he was a young man who was naturally in a state of considerable mental agitation, because he knew that he had cancer of the bladder.

With regard to neuropathies, such as wrist-drop, we have seen none, and this has been a source of considerable surprise, for we know that involvement of certain peripheral nerves has been regarded as almost inevitable in lead poisoning.

The Retina.

Four patients have complained of eye symptoms. In two instances they suffered from temporary loss of vision, the condition lasting only a few hours, complete recovery supervening.

In the other two cases, however, there was considerable œdema of the retina, and in one there was optic atrophy, the patient becoming almost completely blind. It was important to note that the œdema of the retina in each case was associated with generalised œdema of the body and a considerable degree of albuminuria. It is probable that the lesions in the kidney were responsible for the retinal changes.

These symptoms only occurred in the earliest stages of our work, but we feel that they should be emphasised as a serious warning of the dangers associated with this treatment.

THE KIDNEY.

Sometimes the earliest and often the most obvious toxic action of lead is on the kidney. The extent and duration of the damage seem to depend both on the amount of the dose given at one particular time and also on the total quantity of lead administered, even when given in small doses.

TABLE VI.

Case No.	Condition.	Date.	Quantity of Pb to date.	Blood urea.
			g.	mg. %.
185	Retroperitoneal sarcoma.	14/4/25	Nil.	12
		26/5/25	0·3	29
		30/5/25	0·4	32
		26/8/25	0·55	31
186	Carc. of tarsus and tibia.	16/4/25	Nil.	24
		24/6/25	0·5	31
157	Sarcoma of parotid.	26/5/25	0·6	28
150	Carc. mammæ et peritonei.	7/5/25	0·774	22
191	Carc. mammæ.	4/8/25	0·275	29
169	,,	8/5/25	0·407	26
179	Carc. mammæ et maxillæ.	9/1/25	Nil.	19
		16/1/25	0·05	17
177	Carc. of pancreas.	10/11/24	Nil.	29
		1/7/25	0·5	34
189	Carc. mammæ.	20/5/25	Nil.	27
		26/6/25	0·2	31
178	?Ovarian sarcoma.	15/12/24	Nil.	21
		26/1/25	0·225	20
		1/5/25	0·525	13
		6/5/25	0·525	14
		5/6/25	0·625	35
20c.	Renal sarcoma.	6/8/24	0·03	31
		10/9/24	0·2	40
		18/9/24	0·24	45
		28/9/24	0·26	50
		7/10/24	0·28	48
21c.	Carc. mammæ.	12/9/24	0·05	38
		17/10/24	0·145	31
22c.	Carc. œsophagei.	16/9/24	Nil.	19
		20/1/25	0·37	27
23c.	Carc. rectum.	22/8/24	Nil.	43
		10/9/24	0·08	38
		22/9/24	0·155	35
		30/9/24	0·195	40
24c.	Carc. ventriculi.	17/10/24	Nil.	22
		14/11/24	0·11	25
25c.	Epithelioma of jaw.	10/9/24	0·05	35
		28/9/24	0·15	45
		6/10/24	0·20	42
26c.	Carc. œsophagei.	21/1/25	Nil.	19
		27/2/25	0·18	23
27c.	Sarcoma of femur.	17/12/24	Nil.	23
		19/12/24	0·2	44
		23/12/24	(massive	167
		31/12/24	18/12/24)	85
28c.	Epithelioma of face.	14/12/24	Nil.	43
		19/12/24	0·2 (massive)	55
		11/1/25	0·29	31
174	Carc. post cricoid.	4/11/24	Nil.	32*
		6/11/24	0·2 (massive)	66*

* Non-protein nitrogen.

We have attempted to study the effect of lead therapy on renal function from five main points of view: (1) clinical manifestations; (2) changes in the blood-urea; (3) changes in the urea-concentrating power of the kidney; (4) changes in the urine; and (5) pathological changes in the kidney.

Clinical Manifestations.—Usually, after small doses of lead, clinical manifestations are not apparent. Occasionally, however, diminution in the secretion of urine and œdema may occur together with changes in the urine. The appearance of symptoms, or of other evidence of renal impairment, has invariably led to the cessation of treatment, at any rate for the time being, with the result that further signs of renal failure have not occurred. Pre-existing renal disease has been regarded either as a contra-indication to treatment or as an indication for small dosage, according to the severity of the disease. Massive doses, however, have led to the appearance of other symptoms which appear to be due to renal damage. These are pain in the back, hæmaturia, drowsiness, headache, and vomiting. Headache and vomiting, however, may occur without other evidence of renal failure.

Changes in the Blood-urea.—Routine estimations have been made of the urea content and in a few cases of the non-protein nitrogen of the blood. The results obtained seem to indicate that small doses of lead are without effect on the value of the blood-urea. Massive doses of lead almost invariably cause a rise in blood-urea, often a marked rise. There is, however, always a subsequent tendency to fall after a few days. With the rise in blood-urea there is a simultaneous fall in the excretion of total urea. (Table VI.)

Changes in the Urea-concentrating Power of the Kidney.—The urea-concentration test becomes inapplicable of necessity in cases in which there is marked suppression of urine. It is, therefore, of very little value in determining the degree of renal impairment following a massive dose. It was used, however, in one such case after the immediate effects of the lead had passed away. No change in the concentrating power occurred at this period. In respect of smaller doses of lead there were also no definite changes. (Table VII.)

TABLE VII.

Case No.	Condition.	Date.	Quantity of Pb to date.	Urea conc. test.		
			g.		c.cm.	%
25c.	Epithelioma of jaw.	11/9/24	0·05	(1)	28	2·9
				(2)	56	3·4
				(3)	48	4·0
		17/9/24	0·10	(1)	72	2·4
				(2)	168	1·8
				(3)	168	2·2
		23/9/24	0·13	(1)	112	1·9
				(2)	96	2·2
				(3)	96	2·2
29c.	Carcinoma œsophagei.	25/8/24	0·05	(1)	84	2·3
				(2)	112	2·5
				(3)	84	2·4
		4/9/24	0·09	(1)	114	2·1
				(2)	96	2·7
				(3)	84	3·0
23c.	Carcinoma of rectum.	10/9/24	0·08	(1)	168	2·2
				(2)	56	2·3
				(3)	140	2·5
		21/9/24	0·155	(1)	98	2·4
				(2)	120	2·2
				(3)	100	2·2
20c.	Renal sarcoma.	7/8/24	0·03	(1)	300	0·8
				(2)	140	2·2
				(3)	110	2·8
		10/9/24	0·20	(1)	356	1·5
				(2)	168	2·2
				(3)	140	2·3
		22/9/24	0·26	(1)	208	2·1
				(2)	130	2·4
				(3)	130	2·6
28c.*	Epithelioma of face.	13/11/24	Nil.	(1)	224	1·9
				(2)	112	2·2
				(3)	112	2·6
		24/11/24	0·2 (massive 17/11/24)	(1)	112	3·2
				(2)	84	3·4
				(3)	84	4·0

* See Figs. 1, 2, 3.

Changes in the Urine.—Diminution in secretion often precedes the appearance of albumin in the urine following lead therapy, and is a valuable indication of early renal damage. It occurs occasionally during the administration of small doses and almost invariably after massive doses.

The quantity of lead administered in several small doses at intervals necessary to produce albuminuria varied from 0·06 g. to 0·83 g. Massive doses (0·1 g.) invariably produce it at once. The albuminuria usually disappears if no further injections are given. This condition has occurred in 43 (23 per cent.) of the cases treated. The total amount of lead necessary to produce it was less than 0·1 g. in six cases, between 0·1 g. and 0·2 g. in 23 cases, between 0·2 g. and 0·3 g. in 6 cases, and over 0·3 g. in 6 cases.

Casts appeared in all cases treated by massive doses but eventually disappeared in most. On one occasion granular and hyaline casts did not appear until 17 days after the injection of 0·15 g., to disappear again subsequently. It was unusual to find them after smaller doses.

The quantity of chlorides in the urine is unaltered, as a rule, after small doses of lead, but these salts may be completely absent for a time after large doses.

Pathological Changes in the Kidney.—The kidneys of two cases which had received massive doses of lead showed little macroscopic changes at autopsy, apart from congestion. Microscopically, very definite changes were found affecting mainly the secreting tubules.

CASE 28c (Epithelioma of face).—P.M.:—Kidneys: Acute congestion. Considerable amount of advanced cloudy swelling, three-quarters of the epithelium being affected in the tubules. A few isolated areas of chronic interstitial nephritis. No definite endarteritis. (Total amount of lead = 0·35 g., including a massive dose, 0·1 g.).

CASE 29c (see Fig. 4) (Sarcoma of femur).—P.M.:—Kidneys: Moderate amount of cloudy swelling and considerable dilatation of secreting tubules producing an appearance similar to that met with in subacute diffuse nephritis. No casts or other evidence of acute nephritis. Arteries apparently normal. (Total amount of lead = 0·34 g., including a massive dose, 0·1 g.)

The kidneys of three dogs with spontaneous malignant tumours that had received varying doses of lead were also investigated.

Dog, "Major"; mongrel. Kidneys: Cloudy swelling of the secreting tubules. No arterial changes. (Total amount of lead = 0·0612 g.)

Dog, collie (male). Kidneys: Acute congestion and tubular necrosis. (Total amount of lead = 0·2 g.)

Dog, "Pat"; Irish terrier (male). Kidneys: Tubular necrosis. Acute congestion. Thrombi in the glomeruli. (Total amount of lead = 0·0942 g.)

It is interesting to compare these findings with the appearances seen in a case of industrial lead poisoning. Tubular necrosis was found together with evidence of long-standing chronic interstitial nephritis without much glomerular change. There was a definite deposit of pigment.

THE LIVER.

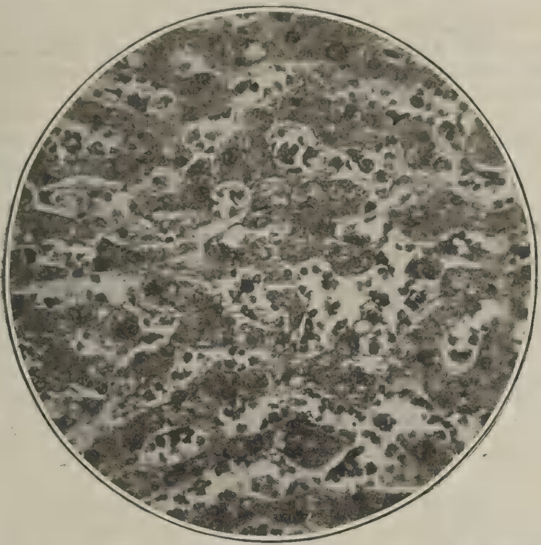
It is possible that some of the symptoms following the intravenous injection of lead—viz., headache, rigors, nausea, and vomiting—are due to impairment of hepatic function. In all cases of general poisoning the liver is the first line of defence, and it absorbs much of the toxic agent from the blood-stream. This has been shown to be the case after the administration of the arsenobenzol derivatives.

The effect of lead on the liver has been studied from two main points of view: (1) The effect on the bile-producing function; and (2) the pathological changes produced in the liver.

Effect on the Bile-producing Function.—All degrees of jaundice have been encountered varying from a slight icteric tinge of the sclerotics after the smaller doses to a deep tint of the skin with a large amount of bile in the urine, which is often seen after massive doses. It is probable that the lesser degrees of jaundice are purely hæmolytic in origin. This is supported by the fact that in these cases, while no bile is to be found in the urine, there is often excess of urobilin, and the Van den Bergh reaction of the blood serum is indirectly positive only.

An explanation of these phenomena would seem to lie in the fact that lead influences the bile-producing mechanism just like phosphorus, arseniureted hydrogen, and toluylene diamine, partly through blood destruction and partly through its direct effect on the bile-secreting cells of the liver. In the slight cases the bile-secreting cells are probably unaffected, and the jaundice is due to the excessive production of bile-pigments from the products of hæmolysis by the Kupffer cells. These pigments are produced in too large a quantity to be taken up entirely and secreted by the liver cells, with the result that a quantity continues to circulate in the blood, and slight jaundice follows—a similar state to that which occurs in pernicious anæmia and acholuric jaundice.

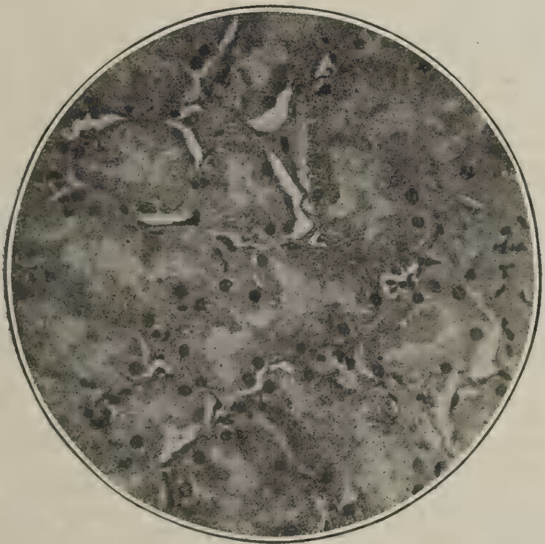
FIG. 1.



CASE 28C.—Section of liver showing congestion, slight fatty infiltration, hæmosiderin. × 300.

In other cases, especially when massive doses have been administered, it appears that, in addition to damage and disordered function of the polygonal cells, there is also obstruction in the smaller bile-ducts due to cholangitis. The jaundice is deep; bile appears in the urine, and an immediate direct Van der Bergh reaction is the rule.

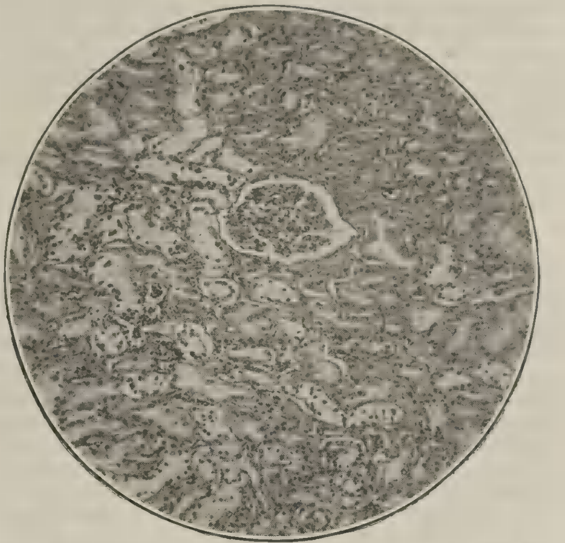
FIG. 3.



The same as Fig. 2. × 300.

Pathological Changes Produced in the Liver.—The pathological changes produced by lead were studied in the material obtained at autopsies on two human subjects and two dogs. The outstanding changes appeared to be: fatty infiltration, congestion, and the deposit of hæmosiderin.

FIG. 2.



CASE 28C.—Section of kidney showing advanced cloudy swelling of tubules. × 75.

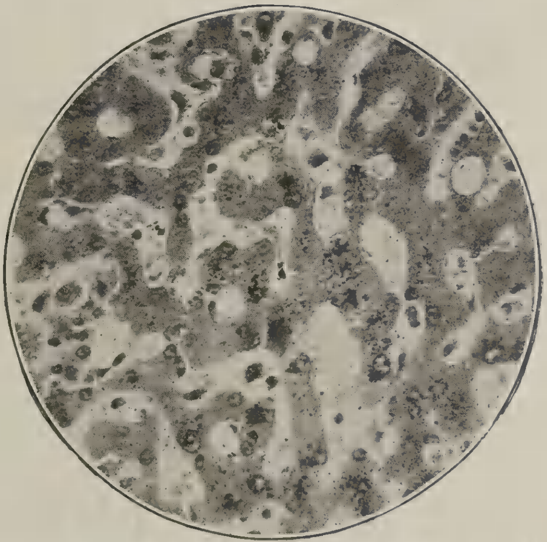
CASE 28C (Epithelioma of face).—Liver: Congestion and small deposit of hæmosiderin. (Total lead = 0·35 g.)

CASE 29C (Sarcoma of femur).—Liver: Fatty infiltration. Deposit of hæmosiderin in the liver cells and Kupfer cells. (Total lead = 0·34 g.)

Dog; "Major." Liver: Fatty infiltration. (Total lead = 0·0612 g.)

Dog, collie. Liver: Marked congestion. Fatty infiltration. (Total lead = 0·2 g.)

FIG. 4.



CASE 29C.—Section of liver showing hæmosiderin. × 300.

Similar changes were found in a case of industrial lead poisoning, where the main features were: fatty infiltration and the deposit of pigment.

It is only right to point out that with increased experience we now find it possible to avoid all the more serious toxic effects of the administration of lead, although it is only to be expected that those of a less serious nature, such as nausea and colic, will occasionally be seen. The foregoing account of the poisonous effects of lead may, indeed, be taken as demonstrating the difficulties through which we have had to fight our way to reach comparative safety. This we believe we have accomplished. At the same time it must be emphasised that only long experience, careful judgment, and complete biochemical investigations have enabled us to secure our patients from harm. Such immunity as we have established in this respect can only be attained by those using this form of treatment if they obtain first-hand knowledge of the method and carefully follow the suggestions made in our next communication on the treatment of patients.

General Summary and Conclusions.

Blood Changes.

1. Lead causes changes in the red cells. There is punctate basophilia, which may appear within a few hours of initial dose. Anæmia and its accompaniments, polychromasia, anisocytosis, and poikilocytosis occur later. This anæmia may be only temporary, or, if bone-marrow be involved, may persist.
2. Leucocytosis has frequently been observed, especially when the blood has been examined shortly after an intravenous administration of lead. Leucopenia occurs occasionally. Neither of these phenomena appears to be constant.
3. A slight relative lymphocytosis may occur, but this is not generally marked.
4. There is a definite increase in the number of granular forms of leucocytes.
5. Anæmia is a consequence of the long-continued administration of lead, and it is accompanied by the usual symptoms of that condition—namely, headache, lassitude, and palpitation. In women there may be amenorrhœa. This last-named is not constant, and depends on many circumstances.

Alimentary System.

1. Blue line at the gum edge is rarely seen when lead is administered intravenously.
2. Nausea and vomiting appear to be dependent on the amount of lead administered, but occur after a smaller total quantity when given in massive doses, rather than after the long-continued administration of small doses.
3. Intestinal colic occurs with considerable frequency after the administration of massive doses; it is not seen after the long-continued administration of a smaller quantity of lead.
4. Constipation and diarrhœa have not been observed as definite phenomena supervening under the treatment adopted.

Nervous System, including the Retina.

1. Psychopathies may occur after the intravenous administration of lead; they are, however, rare.
2. Neuropathies do not occur when lead is administered in the manner mentioned.
3. The retina may be affected; in these circumstances it is probable that it is a concomitant of renal involvement.

The Kidney.

1. The toxic effect of lead on the kidney as the result of intravenous therapy is sufficiently frequent and of such magnitude as to require the greatest caution in the administration of this drug, especially in large doses.
2. The functional impairment caused by many small doses is smaller in degree but more permanent than that caused by occasional large doses.
3. The earliest indications of renal failure appear to be: (*a*) Diminution in the quantity of urine secreted; (*b*) the presence of albuminuria; and (*c*) the presence of œdema.
4. A rise in blood-urea does not occur, as a rule, until the damage is sufficiently great to be detected clinically. Changes sufficiently great to be of value have not been observed in the urea-concentrating power of the kidney.
5. As in nephropathies due to other causes, it is difficult to correlate functional impairment with pathological change. A case which showed advanced cloudy swelling in three-quarters of the tubules has good renal efficiency as determined by the usual tests.

The Liver.

Pathological changes are not so marked in the liver as in the kidney, and the main impairment of function seems to be connected with the bile-producing mechanism.

General.

The administration of lead is a form of treatment that should never be attempted by those who have not complete laboratory facilities at their disposal, and who have not studied for some time the actual treatment of patients.

We wish to acknowledge with gratitude the large amount of work done by Mr. H. F. Woolfenden and Mr. Patterson in our earlier investigations of the effects of lead.

GASTRO-JEJUNAL ULCER.*

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Although gastro-enterostomy has been performed for the treatment of gastric ulcers for nearly 45 years, there is still some doubt as to its value. This doubt is largely due to the fear of the later onset of gastro-jejunal ulcer. Some surgeons are advocating the use of more severe operations to prevent what they regard as a common complication; others believe that the frequency of these marginal ulcers has been much exaggerated and their danger will be outweighed by the increased risk of the larger operation. The time is therefore opportune for a careful review of the known facts which are based upon the large number of figures now available.

Frequency of Gastro-jejunal Ulcer.

The real frequency of the condition must be accurately determined, for it is possible that it is believed to be common owing to the fact that only the failures present themselves for further observation and treatment, while the successes are overlooked. Such an investigation is not, however, without difficulty, for there is no question but that the incidence is increased by want of technical skill in performing the operation. To-day operations of this magnitude are being widely performed by those who have only had a small amount of experience in war surgery, and who, when confronted with an upper abdominal lesion, perform a gastro-enterostomy incorrectly, or, what is of greater importance, perform it when it is not indicated. A high percentage of bad results under such conditions is to be expected, and unfortunately they discredit the operation even when it is correctly performed. On the other hand, unless all the cases are seen in an adequate follow-up department, many examples of this complication may be overlooked and the incidence placed too low. In Paterson's [12] original paper stress was laid upon the difficulty of obtaining true figures, but he found three cases in 348 patients, that is, a little under 1 per cent. Judd[8] reported 54 in 3324 gastro-enterostomies, that is, 1·04 per cent. Lewisohn,[9] on the other hand, has reported an astonishing series of 68 cases, 23 of which developed gastro-jejunal ulcers, a percentage of 34. Generally, however, there is a remarkable unanimity among surgeons of wide experience in placing the frequency between 1 and 2 per cent. My own experience is as follows:—

There have come under my care 20 cases of gastro-jejunal ulcer, 11 of them being cases upon whom I had personally operated. It is almost certain that these 11 are the total number, for all cases have been carefully watched in a most satisfactory follow-up department, and I do not think that any with this complication have escaped observation. These 11 occurred in a total of 783 gastric and duodenal ulcers which had been subjected to operation, giving a percentage of 1·4 (Table I.). Of these cases, however, a gastro-enterostomy was alone performed in 631 cases, so that the danger of this ulcer formation after simple gastro-enterostomy may from this group be estimated at 1·7 per cent. My figures, however, show that the lesion is only common after duodenal and pyloric ulcers; in fact, of the 11 cases only one occurred after a lesser curve ulcer. If, therefore, we consider the pyloric and duodenal ulcers alone, that is the group that is most favourably placed for the onset of this complication, we find there are ten anastomotic ulcers in 417 cases, a percentage of 2·4, which may be regarded as the highest incidence. It must, however, be remembered that for so crippling and dangerous a disease as an ulcer at or about the pylorus a gastro-enterostomy gives us, as I have elsewhere shown,[17] 90 per cent. of complete cures, results which are incomparably better than after any form of medical treatment. The operation must not, therefore, be condemned because so small a percentage is left with this dangerous complication, and before substituting for it any other form of operative procedure, we must be confident that this procedure does prevent the incidence of this disease, and has not a higher mortality than that of simple gastro-enterostomy, which is well under 1 per cent.

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*A paper read before the American Inter-State Congress in London.

TABLE I.—*Frequency of Gastro-jejunal Ulcer.*

—	Total.	Gastro-jejunal ulcers.	Percentage.
All ulcers	783	11	1·4
Gastro-enterostomy alone	631	11	1·7
Pyloric and duodenal alone	417	10	2·4

Ætiology and Pathology in Relation to Prevention.

There are, however, certain points in the ætiology and pathology of this condition which will indicate how its onset can be prevented. As a general rule the jejunum is remarkably free from ulceration, and is generally only affected after an artificial anastomosis has been made between it and the stomach. Von Roozer[16] in reporting three cases first suggested the possibility of primary ulceration in this position, and Richardson, in reporting two of his own cases, was able to collect ten others from the literature. I[17] have reported another similar case occurring in a woman. After gastro-enterostomy the ulceration always occurs in proximity to the junction, and although gastro-jejunal and jejunal ulcers have been described, I have never yet seen a true example of the latter. In every case which I have had the opportunity of observing there has been evidence that the ulcer has started directly at the junction, for even when the ulcer was relatively remote there was a scar extending to the anastomotic line.

The ulcers are nearly always found after an operation for a pyloric or duodenal ulcer. This relationship has been constantly found by all observers, and it will be noted in my own series of 20 that there was only one unusual case in which the ulcer followed a lesion of the lesser curve. It is also almost wholly limited to males, possibly because they are so much more liable to ulcers at the pylorus and in the first part of the duodenum. In my own series of 417 pyloric and duodenal ulcers, 344 occurred in males, and of the 20 gastro-jejunal ulcers only one was a female (Table II.), and in her case there were exceptional conditions. It is said never to follow an operation for carcinoma of the stomach, although I know of one such in the literature which was reported by Lennander.

TABLE II.—*Distribution of Gastro-jejunal Ulcers.*

Ulcers.	Total.	Males.	Females.	Gastro-jejunal ulcers.
Lesser curve ..	366	228	138	1
Duodenal and pyloric	417	344	73	19
Gastro-jejunal ..	20	19	1	—

The ulcers, as seen shortly after the gastro-enterostomy, may be acute, shallow and irregular in outline, and usually involve one-third or so of the circumference of the new opening. The floor may be covered with sloughing material, and may be the site of a considerable amount of hæmorrhage. If seen later they have all the characters of a chronic peptic ulcer and deeply penetrate the walls at the junction. If they become adherent to the colon the penetration may give rise to a gastro-jejunal colic fistula; if non-adherent, perforation leads to a diffuse peritonitis. A few may penetrate anteriorly, and becoming adherent to the abdominal wall lead to a local abscess. It has been thought that the ulceration owes its inception to the trauma of clamps applied to the jejunum during the operation. This is, however, improbable, since the ulcer nearly always commences, not in the jejunum, but at the line of suture, and the complication seems to be as common whether the anastomosis be performed with or without the use of clamps. The experiments of Gronnerund[3] showed that in dogs the use of clamps made no difference to the incidence of gastro-jejunal ulceration.

Occasionally acute ulceration at the junction is found when the patient has suffered from some acute infective condition immediately following the operation, and hence it is probable that such an infection may be a predisposing factor. It cannot, however, be the only one, nor indeed the most important one, for in many cases the patient has made an uninterrupted recovery from the gastro-enterostomy.

Technical Errors in the Primary Operation.

Technical errors in the performance of the primary operation are unquestionably an important factor; the ulcers, for instance, are found much more commonly after the use of Murphy's button, as is, indeed, to be expected, for this device has to separate by a process of sloughing at the edges of the anastomosis which is likely to progress to chronic ulceration. In the same way the use of silk sutures appears to be a definite factor, for a large number of such ulcers have been reported where a portion of silk was found hanging from the base of the ulcer. In my own 20 cases a portion of such suture was found in nine, so that at one time I was strongly of the opinion that this was the factor of importance. The persistence of the ulcers after the sole use of catgut sutures shows that this is not the only cause. Catgut should alone be used, as it will reduce the incidence of this complication, but it will not entirely abolish it. Another step in the technique around which much discussion has arisen is that of occlusion of the pylorus. Martin[10] points out that the pancreatic secretion is normally activated by the passage of acid through the pylorus. The contact of this acid with the duodenal mucosa produces secretin which is carried by the blood-stream to the pancreas where it stimulates the secretion of the pancreatic juice. Galpern[2] has laid stress upon the importance of this in surgery, and quotes an experiment of Popielski in support of it; a dog's stomach was divided into pyloric and cardiac halves; the introduction of acid into the cardiac end produced no flow of pancreatic secretion, but when inserted into the pyloric end the secretion was profuse. He believes that this experiment is reproduced when the pylorus is occluded. Holzweissig[6] quotes a case supporting this view. The bile and pancreatic ducts were occluded by gall-stones and caused the death of the patient. At post mortem acute ulcers were present in the first 10 cm. of the jejunum, and he believes that this was due to the fact that the acid was not neutralised in the pancreatic secretion. It is interesting to note in this respect that in my one case of gastro-jejunal ulcer occurring in a woman there was also chronic pancreatitis with obstructive jaundice, and it is possible that the absence of a pancreatic secretion was a contributory factor. Von Haberer[5] believes that occlusion of the pylorus has a very definite bearing, for he states that in his series there were 275 cases of simple gastro-enterostomy with three cases of jejunal ulcer, and 71 cases of pyloric occlusion with 12 jejunal ulcers. These views are in entire opposition to the findings of Paterson,[12] who has shown that after gastro-enterostomy there is a diminution in the total chlorides as well as in the free HCl, a change which he regards as being due to the fact that the hormone regulating the formation of HCl is formed in the pyloric portion and is not utilised if the food does not enter this portion of the stomach. Whether a permanent and complete occlusion of the pylorus has any effect on increasing the incidence of this lesion I have no evidence in my own experience to show, but my figures make it quite definite that embedding a duodenal ulcer with silk, which gives rise to a temporary occlusion, has no such effect, for not only have I not had a larger incidence of this complication, but I also carry out a similar temporary occlusion after excision of all ulcers of the lesser curve, and a gastro-jejunal ulcer here is of extreme rarity. That gross errors of technique will increase the incidence of this condition is therefore certain, but that alterations in the minor details have any bearing is improbable, for the majority of surgeons have an incidence of 2 per cent., and it is unlikely that they would all commit errors with the same frequency.

Gastro-jejunal Ulcers and the Prior Operation.

The important question, however, is whether these ulcers can occur after operations other than gastro-enterostomy. The two alternative steps which have been most frequently advocated are gastro-duodenostomy and partial gastrectomy.

Naturally enough no true gastro-jejunal ulcer can occur after a gastro-jejunostomy, but any recurrence of the ulceration at or about the site of the enlarged pyloric opening would be of a similar nature, and would have to be considered in weighing the merits of one operation against the other. Such recurrences are indeed not uncommon, and Turner[15] in his analysis of 43 cases of pyloroplasty found in four cases a recurrence with inflammatory masses near the pylorus, giving a recurrence rate of over 8 per cent., which is considerably greater than the incidence of gastro-jejunal ulcer.

It is generally tacitly assumed that a partial gastrectomy will not be followed by any gastro-jejunal ulcer, and it is on these grounds that this more extensive operation has of late been so frequently advocated as a routine line of treatment for pyloric and duodenal ulcers, and this in spite of the fact that even in the hands of skilled surgeons this operation may be, as Pannett,[11] who advocates its use, points out, a very prolonged and tedious measure which is associated with many difficulties. It is certainly the experience of the majority of surgeons that such ulceration is much less common after partial gastrectomy than after a simple gastro-enterostomy, and Sherren,[14] in 1924, states that up to that period he had never had a marginal ulcer after partial gastrectomy, and the argument has even been put forward that such ulceration is almost impossible because removal of the pyloric antrum abolishes the mechanism of the secretion of acid in the fundus glands. There have occurred in my practice two cases following partial gastrectomy by other surgeons, and others have been reported by Beer[1] and H. Haberer.[4] Von Haberer[5] has even abandoned the Billroth II. and Polya operations and returned to the Billroth I. method, as gastro-jejunal ulceration was in his experience so common after the former operations. Wright,[18] after reporting two cases of a similar nature, gives what is probably the correct explanation of the popularly accepted belief that these ulcers are rare after this operation. He states that up to the present time partial gastrectomy has usually been performed for carcinoma of the stomach, and it is only of recent years that it has been carried out for peptic ulceration, and that marginal ulceration has begun to follow its use. There is thus no doubt that this serious complication is not entirely eliminated by the substitution of the more dangerous operation of partial gastrectomy. Dr. Mayo has pointed out that the removal of so large a portion of the stomach for a small ulcer, perhaps of less than 1 cm. in diameter, in order to lessen the frequency of this rare complication, is too extensive and too dangerous a procedure. This has always been my own view, and I have been very loth to remove perhaps three-quarters of the healthy stomach for a small innocent ulcer. It is true that surgeons of wide experience are agreed that the end-results of a partial gastrectomy are extremely satisfactory, and in the 188 cases in which I have performed this operation for large ulcers and carcinoma I have never met with any severe disability. Nevertheless, Hurst[7] has laid special stress upon the late complications following gastrectomy, and has even claimed that later in life it may be followed by pernicious anæmia. He states that he knows of five such cases where this complication resulted. These claims cannot yet be considered as proved, but they strengthen the belief that so large a removal of a healthy viscus will be found in the future not to be entirely free from danger. Too much stress must not be placed upon the published statistics, for these are generally the results of surgeons of wide experience, and it is highly improbable that surgeons less skilled in abdominal surgery will be able to obtain a mortality even as low as 10 per cent., a mortality which is greater than the combined mortality of gastro-enterostomy and the incidence of gastro-jejunal ulcer after such an operation. To my mind, therefore, there can be no justification for the general substitution of partial gastrectomy for gastro-enterostomy in the treatment of pyloric and duodenal ulcers. I believe that an entirely exaggerated view has been taken of the importance and incidence of marginal ulceration after gastro-enterostomy. This complication is a very serious danger, but it only occurs in a small percentage of cases, and its incidence will not be entirely prevented by the use of an operation which carries a much higher mortality.

Acid of the Gastric Juice in Relation to Ulceration.

It is now clearly recognised that there is a close relationship between the amount of acid in the gastric juice and the incidence of gastric and duodenal ulceration. The work of many investigators, and especially that of Hurst,[7] has established the fact that with pyloric and duodenal ulcers the acidity is high, and it is after operation for these lesions that gastro-jejunal ulceration most commonly occurs. With lesser curve ulcers the acidity is lower and marginal ulceration is rare. With carcinoma, free acid is usually absent, and marginal ulceration is practically unknown. The test meals of my own cases make these facts clear. With carcinoma of the stomach there was nearly always a complete absence of free acid, and with the lesser curve ulcers it was lower than with the pyloric and duodenal ulcers (Table III.). Of the 20 cases of gastro-jejunal ulcer I was able to obtain records of the test meals previous to the first operation in my own 11 cases and in two others. In these 13, who were all males, the acidity was much above the average (Table IV.). As this series was small Mr. Cairns investigated a complete series from the London Hospital comprising 50 cases. Excluding my own cases as above, and those in which the primary operation was performed elsewhere, there were left 19 cases, the average acidity of which is shown in Table V., the figures of which are nearly identical with my own.

In the one case of lesser curve ulcer in which a marginal ulcer followed operation, the test meal showed before the primary operation free HCl 0·23, total acidity 80, and before the marginal ulcer 0·10, 40.

It seemed possible that a variation in the acidity between the different sexes might also account for the tendency of this complication to occur almost entirely in males. I therefore investigated the figures of my series, and it is clear from an inspection of Table VI. that both with the lesser curve and the pyloric and duodenal ulcers the average acidity was considerably higher in the males than in the females.

TABLE III.—*Acidity with Different Types of Ulcer.*

Ulcers.	Cases examined.	Average total acid.	Average free HCl.
Lesser curve ..	192	58	0·118
Duodenal and pyloric	257	62·5	0·160

TABLE IV.—*Acidity with Gastro-Jejunal Ulcer.*

Gastro-jejunal ..	13	71	0·18

TABLE V.—*Acidity with Gastro-Jejunal Ulcers* (Mr. Cairns).

Gastro-jejunal ..	19 all males.	68	0·18

TABLE VI.—*Acidity in the Two Sexes.*

Lesser curve—			
Males	135	61	0·123
Females	57	51	0·108
Pyloric and duodenal—			
Males	213	63·5	0·165
Females	44	57·6	0·136

Up to a short while ago it was usually accepted that the effect of gastro-enterostomy for a pyloric or duodenal ulcer was in the greater number of cases to enormously decrease or entirely abolish the amount of free acid which occurred in the test meal. More recent observations have tended to throw doubt on these conclusions. Therefore Mr. Cairns collected and examined for me a considerable series of more recent cases at the London Hospital, where observations on the acidity had been carried out both before and after gastro-enterostomy. The cases occurring in the years 1921–24 were taken and included 51 lesser curve ulcers and 115 pyloric and duodenal ulcers. Of these, nine of the lesser curve and two of the pyloric ulcers had no free acid previous to the operation and are therefore excluded. The changes occurring in the remainder are seen (Table VII.). It will be noticed that whereas in nearly three-quarters of the gastric ulcers the free acid is abolished after operation, this change occurs in rather less than half of the duodenal ulcers. It is very probable that this difference is due to the tendency to place the stoma nearer the pylorus with the pyloric and duodenal ulcers than with those on the lesser curve, and thus to bring about a less efficient neutralisation. In my group of 13 gastro-jejunal ulcers in which test meals had been taken before and after the gastro-enterostomy, the effects were even less marked. The average acidity as contrasted with Table IV. had fallen (Table VIII.), but the numbers to be benefited were below the average (Table IX.). It is possible that the failure of the acid to fall in these gastro-jejunal ulcer cases may be due to an anatomical variation, the acid-producing cells in a certain number of duodenal ulcer cases (about 2 per cent.) being more widely distributed over the gastric surface, and thus being less affected by the gastro-enterostomy, but whatever may be the cause there is no doubt that the ulceration is dependent upon the higher acidity which occurs in the pyloric and duodenal ulcers in males, and which tends to persist after gastro-enterostomy for the latter group of ulcers.

TABLE VII.—*Changes in Acidity after Gastro-Enterostomy.*

—	Total.	Acid increased.	No change.	Acid lowered 50 % or more.	Free acid abolished.
Gastric ..	42	1	3	9	29
Duodenal	113	2	7	53	51

TABLE VIII.—*Acidity after P.G.E. with Gastro-Jejunal Ulcers.*

Ulcers.	Cases.	Average total acid.	Average free HCl.
Gastro-jejunal ..	13	44	0·12

TABLE IX.—*Changes in Acidity in Gastro-Jejunal Ulcers.*

Ulcers.	Total.	Acid increased.	No change.	Acid lowered 50 % or more.	Free acid abolished.
Gastro-jejunal	13	3	[illegible]	5	3

Course of Events after Prior Operation.

It is usually accepted that the majority of cases of gastro-jejunal ulcer do not seek treatment until a considerable period has elapsed after the gastro-enterostomy, and in the ordinary course of events it will generally be found that a patient returns to hospital or to his surgeon complaining of disability some three or four years after the operation. In many published cases, indeed, the interval has been much longer than this, and has extended to 10 or 15 years, so that this free interval is often quoted as being characteristic of the disease. One thing has, however, very clearly emerged from my periodical examination of these cases in a follow-up department, and that is that they never make the same complete and absolute recovery after the gastro-enterostomy which is so characteristic of the greater majority of duodenal and pyloric ulcers. They will often state that they are very much better and have been enormously improved, but if they are cross-examined it will be found that they are unable to take full diet, or that they have a little feeling of discomfort coming on late after food which necessitates their taking a dose of bismuth and alkali through a prolonged period after the operation. It will be noted, too, that although these symptoms are so slight there is a certain periodicity about them. They may continue for a month or two after the operation and then be considerably relieved for several weeks, only to return again. This change is very distinct from the usual patient who states that he is perfectly well, is able to eat anything, and has never been so well in his life. As they are watched from month to month it will be noticed that they develop a more definite periodicity, their symptoms become more marked, and especially does the pain become more severe. By keeping a careful record in this way it will often be noticed that when their symptoms have been established they will state that they have been quite well after the operation for a prolonged period, having in the meantime entirely forgotten the minor symptoms. By such a method of careful following it is possible to get evidence of these ulcers in their earlier stage, and I think it is the use of such a department which explains the fact that I have never yet seen a perforation of one of these ulcers either into the general peritoneal cavity or into the colon; complications, which from the published statistics, appear to be relatively common. When the disease is well established the severe symptoms show a periodicity which is nearly as characteristic as that of a duodenal ulcer. They appear in attacks which will last from three to four weeks, and may then be followed by several months of complete relief. If the base of the ulcer becomes adherent to the surrounding tissues, most frequently the transverse colon and the mesocolon, the symptoms will tend to become much more constant. The pain shows characters which in the greater part are similar to those of a duodenal ulcer; that is to say, it comes on late after the ingestion of food, will often wake the patient at night, and nearly always is relieved for the time being by taking more food. It differs, however, in one respect: it radiates more widely, and especially does it pass down to the left iliac fossa. It is often described as agonising and severe, and at first when the ulcer is non-adherent is relieved by alkalies. Later, if the transverse colon is involved, practically no relief is gained by this means. It is interesting to note that in the majority the attacks of severe pain are associated with vomiting, an indication that the stomach is involved as well as the jejunum. Generally a considerable amount of relief is given by the vomiting, which nearly always contains a large amount of bile. As a rule, hæmorrhage is not a marked feature, but there are cases where it is predominant, and I have two cases in my series in which the presence of repeated hæmorrhages, which had reduced the patient to a considerable degree of anæmia, were the only evidence that ulceration existed. In such cases the ulceration is usually much more superficial, and the absence of pain is accounted for by the fact that the deeper tissues are not involved. Generally the test meal shows the presence of a considerable amount of free acid, the reduction by the gastro-enterostomy having been very incomplete. In three of my cases, however, there was a complete absence of free HCl. The X ray evidence is usually of great value. In the long-standing cases direct evidence will be obtained, for the outline of a penetrating ulcer may be easily visible, or after the meal has passed from the stomach a meniscus may be left in the region of the stoma. In the earlier and more shallow ulcers the evidence will not be so definite and may chiefly consist of hyperperistalsis and irregular contractions of the stomach and duodenum. Direct evidence of some alteration in the outline of the stoma was obtained in 12 of my cases.

Treatment after Ulceration has Occurred.

If once ulceration has occurred, and there are definite symptoms or a positive X ray examination, operative interference is the only treatment that is likely to be of any value, but in the earlier stages, when there are simply ill-defined symptoms, a course of medical treatment may possibly prevent the progress of the ulcer, and it is in order to obtain the cases in this stage that a series of follow-up investigations is of extreme value. As regards the preventive treatment of the first operation it has been pointed out already that one of the factors of importance is the abolition of all mechanical devices to perform the anastomosis and the use of catgut sutures throughout. In addition, extreme care must be taken to bring about absolute apposition of the mucous coat, for if a gap be left the deeper layer of sutures will be exposed, and although of catgut they may persist for a long time and act as foreign bodies. For this reason I have abandoned the excision of the strip of mucous membrane surrounding the opening, although this method gives a much neater union. Another factor which I think will be of value, and which I am now adopting, is to place the anastomotic opening rather higher up on the greater curve, that is, about 3 in. from the pylorus. There was a tendency among all surgeons in the past to make the opening as near to the pylorus as possible, but it has been clearly shown that in ulcers of the lesser curve, where the opening has been placed high up, the results have been satisfactory, and as a general rule the higher the opening is placed the more complete is the neutralisation of acid. I was formerly of the opinion that, in the treatment of the established condition, excision of the ulcer and resuturing with catgut alone would often give rise to a cure; further experience has, however, shown that this method is unsatisfactory. Where it was adopted I have had four cases of recurrence, and I believe that the only treatment which is likely to be of any avail is to perform a partial gastrectomy which is sufficiently extensive to considerably reduce the acid. This may be one of the most difficult operations in modern surgery, especially if the primary operation has actually been of the no-loop variety. If the opening is placed 1–2 in. distal to the flexure the operation is comparatively easy, and it is now, therefore, my custom in all cases of pyloric and duodenal ulcers in which the acid in the test meal is abnormally high not to perform an absolute no-loop gastro-enterostomy, but to place the opening about 2 in. from the flexure. I have never found any evil consequences follow this step, and I believe that we have been obsessed with the idea of the value of no-loop anastomosis owing to the evil effects which unquestionably follow the use of very long loops. The division of the stomach should be made well proximal to the anastomosis, and if sufficient of the stomach is taken away it is almost certain that the acid will be reduced; that is to say, the method which one would advocate is to perform a simple gastro-enterostomy with the opening rather higher than usual and rather further from the flexure as the routine treatment for pyloric and duodenal ulcers, and to reserve the more extensive and dangerous operation of partial gastrectomy for the small number of cases that develop gastro-jejunal ulceration. Although the partial gastrectomy for these ulcerative cases is undoubtedly a severe operation, most of the patients stand it remarkably well. In my own series of cases it has been performed 13 times, and 11 cases have made a complete recovery, and after the partial gastrectomy have remained entirely free from symptoms. The question will naturally arise, if partial gastrectomy is unsatisfactory as a primary method of treatment, why should it be selected as the method of choice after the ulcer is definitely established? The answer to this is that the liability for secondary ulceration will probably depend upon the amount of stomach which is removed, so that if a partial gastrectomy is performed at the primary operation it will have to be extensive, and will carry a high mortality, and so big and extensive an operation should be reserved for the small number of cases that have definitely developed this complication.

Conclusions.

(1) Gastro-jejunal ulcer is a relatively rare complication of gastric and duodenal ulcer occurring in a little over 2 per cent. (2) Its frequency does not warrant the introduction of extensive operations for the treatment of the primary condition. (3) It is almost entirely limited to pyloric and duodenal ulcers. (4) It occurs almost wholly in the male sex, and is found in those cases in which the gastric acidity is high. (5) As a general rule it is found when the acidity after the primary gastro-enterostomy persists, this being possibly due to an anatomical variation in the distribution of the oxyntic cells in the stomach. (6) The symptoms of this complication, although slight at first, nearly always commence immediately after the primary operation. (7) The frequency of the condition will probably be diminished by performing the anastomosis rather higher up than usual. (8) The treatment of the established condition should be by partial gastrectomy, which will be aided by placing the stoma rather more remote from the flexure than is usual at the first operation.

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THE VALUE OF SOFT-RAY TECHNIQUE IN PULMONARY RADIOGRAPHY.

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THIS article is an attempt on the part of the writers to explain the value of the soft-ray technique of radiography,[1] especially as a diagnostic aid in dealing with early tuberculous lesions of the lungs. A radiograph of a lung affected with tuberculosis may be made to show a very different picture, according to the quality of the rays employed. The hard ray will penetrate an early focus of tubercle and give an appearance similar to that of normal tissue. Old fibrotic foci, however, are opaque to the more penetrating, and in fact, to all rays. The hard-ray radiograph is liable to show the older and healed lesions only, the more recent and much more important earlier foci being generally missed. In order to obtain really satisfactory results in pulmonary radiography, soft-ray technique must be employed.

Comparison of Techniques.

The appearance of a normal healthy chest in an adult taken by hard-ray technique varies enormously from the same subject taken by soft rays. Using the hard ray, the fine mottling of the connective and interstitial tissue of the lung is not shown, and the harder the ray the less this is discernible. All that is seen in the negative is a more or less uniform darkness over the whole of both lungs, with the ribs showing very plainly, even the bony markings being visible ; the vertebral column, too, is often plainly distinguished through the heart shadow. The roots of the lungs appear as lighter shadows on each side, but their finer parts are not seen, nor are the delicate radiations which extend downwards, upwards, and outwards from them. This appearance, of course, varies with the hardness of the ray employed, the harder the ray the more easily does it penetrate the interstitial tissue of the lungs.

The appearance of the same chest taken by the soft-ray technique is very different. Scattered through the lungs on both sides there is seen a fine mottled and striated appearance, which is the pulmonary connective and interstitial tissue, the roots are much better defined, and their radiations plainly seen. The ribs appear as more or less indefinite shadows, and the fine bony markings on them are not evident. The details of the vertebral column are not seen, as the soft ray does not penetrate the heart and pericardium.

Comparing these two radiographs, the uninitiated would perhaps say that the one taken with the hard ray was the better picture of the two, and the one taken by the soft ray might perhaps be diagnosed as tuberculosis affecting the roots of the lungs, the mottling being also thought to be pathological in appearance. These characteristics are even more distinct in children ; and in children of, say, about 8 to 10 years old the diagnosis of hilum tubercle has no doubt often been made from the appearance of a soft-ray radiograph of a normal chest of a child. It is a very important thing, when giving an opinion of a chest radiograph, to be able to distinguish what is normal from what is beginning to depart from the normal, which can only be done by an extensive experience of the soft-ray technique.

We might here mention that, in our opinion, it is extremely important that the radiologist should mark on the radiograph the conditions under which it was taken—i.e., penetration of tube, milliamperage, focal distance, exposure, &c. To resume, by using the hard-ray technique an excellent picture of the bones of the chest is obtained, but the finer details of the lung tissue missed.

In THE LANCET of March 17th, 1925, the present writers, in a paper entitled X Ray Examination of the Chest, discussed the value of X rays in the detection of pulmonary tuberculosis, and stated that, in their experience, they had come across several cases where physical signs were absent on clinical examination, but which showed, on X ray examination, signs of tubercle such as enlarged glands, and masses of infiltration round the hila, lesions which could not be made out with any degree of certainty by clinical means. They are now prepared to go even further than this, and to state that a recent pulmonary lesion in an early case, or a new focus in an old case, may be detected by the soft-ray technique, before definite physical signs have made their appearance. The old hard-ray method was of no use whatever as a diagnostic aid in early pulmonary tubercle ; it showed up the old fibrosing lesions perfectly well, but penetrated and completely missed the early infiltrations, which latter are revealed by means of the soft-ray technique, as fluffy, indefinite, cotton-wool-like shadows. It was because of the general use of the hard rays in former years that X ray examination, as an aid to diagnosis in tubercle of the lungs, fell into disrepute. It is still, we believe, very commonly stated that tuberculosis of the lungs which cannot be discovered by careful clinical methods will not be discovered by X ray examination, either fluoroscopic or radiographic. This, we beg to submit, is certainly not always the case, and in every suspected case of pulmonary tuberculosis, whether it is an early new case or a suspected reinfection in an old case, competent X ray examination should be performed as a matter of routine, using the soft rays, the technique of which is given below.

Correct Technique of Chest Radiography.

Before discussing the correct technique of chest radiography, we might mention that, in our opinion, the following accessories are necessary to the radiologist : 1. Kilovoltmeter. This instrument saves the time and trouble of taking readings by equivalent spark gap, penetrometer, &c. 2. A reliable milliampermeter. 3. An automatic time switch.

Technique.—The following standardised technique has been adopted by the writers : Kodak duplitised films between two intensifying screens ; distance between anticathode and film, 1 metre ; secondary voltage, 45 kilovolts ; milliamperage, 40 ; exposure, $\frac{1}{2}$ to 1 second, according to the thickness of the subject, the double focus Coolidge tube being employed.

Standardisation of Technique.—In chest radiography it is important that the technique be standardised, as when a case comes for re-examination it is useless to compare the two radiographs, if the first one has been taken under one set of conditions, and the second one under another. In this respect the Coolidge tube and high-tension transformer are

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[1] By soft rays we mean a secondary voltage of 45 kilovolts = an equivalent spark gap of about 4 inches = 4 benoist. By hard rays a secondary voltage of 60 to 70 kilovolts = an equivalent spark gap of about 6 inches = 6 to 7 benoist.

(*Continued from opposite page.*)

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invaluable, as the current passing through the tube and the penetrating power of the rays are independent of each other. If the auto-transformer rheostat is adjusted to give a certain secondary voltage, the penetration of the tube remains constant no matter whether 4 or 40 milliamperes are passing through the tube. An X ray journal should always be kept, and in it noted the conditions under which the radiograph is taken, so that if a patient comes for re-examination, the conditions under which the first radiograph was made can be duplicated. For example, patient A. B. was radiographed six months previously, and is referred by his specialist for re-examination, reference is made to the X ray journal, and it is noted that the previous entry reads: "Focal distance, 1 metre; penetration, 45 kilovolts; milliamperes, 40; exposures, 0·75 second"; Procedure: The auto-transformer rheostat is advanced until the kilovoltmeter shows a secondary voltage of 45 kilovolts; the rheostat controlling the heating current of the Coolidge tube adjusted until the milliampermeter shows that the tube is drawing 40 milliamperes, and the automatic time switch set for 0·75 second. The exposure is then made. In this way the radiologist is absolutely certain of having duplicated the technique of the previous radiograph. Development of the film must also be standardised, the usual method being to develop the film for five minutes at a temperature of 65° F.

A NOTE ON

CHRONIC ENDOCERVICITIS:

THE END-RESULTS OF OPERATION.

BY JOHN WILLIAM BURNS, M.D. DUB., F.R.C.S. EDIN.,
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IN 1922 I read an article[1] on chronic endocervicitis and its treatment before the North of England Obstetrical and Gynæcological Society, in which I stated my belief that the best way of dealing satisfactorily with cases of chronic endocervicitis, especially those associated with erosion, was to remove the eroded area along with the lower half or two-thirds of the cervical canal—i.e., the infected portion.

One of the main criticisms aimed at the particular type of operation which I had adopted was that it would probably have a very serious effect upon subsequent conception, pregnancy, and labour.

Technique of Operation.

Before dealing with the end-results I would like to refer to the operative procedure adopted in these cases. It is that devised by Sturmdorff, of New York, and described by Matthews.[2] The eroded area of the cervix is encircled by an incision which penetrates the vaginal covering of the cervix only. The area within the incision is seized with vulsella and pulled strongly downwards. The incision is deepened in an oblique manner with a knife or sharp-pointed scissors, so as to reach the cervical canal in the region of the junction of the upper and middle thirds. By this means a cone of tissue is removed which contains the eroded area of the cervix and the infected cervical lining. Four sutures are inserted—one anterior, one posterior, and one on either side. A vaginal pack of gauze soaked in acriflavine (1:1000) left in for 24 hours is all the dressing required.

There are several little points in the technique attention to which renders the operation very easy. The cone of tissue should not be completely separated until the lateral sutures have been inserted. As soon as the cervical canal has been exposed it should be seized with strong forceps, and pulled down in order to render easy the passage of the anterior and posterior sutures. If this is not done there is a danger of wounding the bladder in front and of opening the recto-vaginal space behind. The sutures should not be tied until all four have been inserted. The needles which I find easiest to use are small fully curved bayonet-pointed, and must be fairly strong. As a rule I do not dilate the cervix or curette the uterus.

Advantages.

These are: (1) It can be modified to meet any type of cervical laceration. (2) The whole of the infected portion of the cervix is removed and as a result healing takes place rapidly and by primary union. There is, therefore, a minimum amount of scar tissue formed. (3) There is no post-operative bleeding, as the four sutures used efficiently control the four segments of the cervix. (4) The leucorrhœa, which for the most part comes from the infected portion of the cervix, is quickly reduced, and the vaginal exudation is allowed to resume its normal acid protective quality. (5) A potentially malignant area of the cervix is removed.

Results, Immediate State.

The immediate results of this operative treatment of chronic endocervicitis are excellent. The vaginal discharge and backache disappear, and also the other discomforts arising from a profuse leucorrhœa. The patient's general health rapidly improves, probably because with the removal of the infected area she is no longer absorbing toxins. Out of 92 cases operated upon in 1922 and 1923, and investigated and followed up until a recent date, only three returned to hospital complaining that they were not cured. Of these two turned out to be cases of gonorrhœal infection, while the third was a woman who, in spite of advice, would persist in frequent douching. In view of the belief that malignant disease develops in a cervix which is chronically inflamed, it is interesting to note that out of over 200 cases examined microscopically I have not found a single case of early carcinoma or epithelioma.

The effect of this operative treatment upon subsequent conception, pregnancy, and labour is shown by the following analysis of the cases operated upon during 1922 and 1923:—

Total number of cases operated upon		120
Failed to report	28	
Cases in which supravaginal hysterectomy had been performed	3	
Cases at or beyond the menopause.	5	
Unmarried	3	
Sterile..	10	
Cases of salpingo-oophoritis	6	
	55	
Total cases in which pregnancy might be expected to occur	65	

Of these 65 cases 14 became pregnant within a period varying from two months to two years following the operation, that is, 21·5 per cent. This would appear all the more satisfactory when the fact is taken into consideration that the average age of these patients at the time of operation was 35 years. Of the 14 patients who became pregnant, one became pregnant twice within two years of the operation and 13 once, thus producing 15 pregnancies—

Total pregnancies		15
Cases which went to full term	10	
Cases terminating in miscarriage	3	
Cases not yet delivered	2	

All those cases which went to full term passed through perfectly normal labours. Of these ten cases two were primiparæ, one of which miscarried over the first pregnancy, conceived again within six months, and this time the pregnancy went to full term and terminated in normal labour. While the number of cases terminating in normal labour is somewhat small to base definite conclusions upon, yet I think these results show that this particular tracheloplastic operation has very little effect upon conception, pregnancy, or labour. The fact that eight of these cases had periods of sterility varying from two to eight years preceding the operation is suggestive that the infective condition of the cervix inhibits conception.

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[1] THE LANCET, 1922, ii., 796.

[2] Journal of Surgery, Gynæcology, and Obstetrics, March, 1921.

Conclusions.

(1) The operative treatment of chronic endocervicitis brings about a rapid and permanent cure.

(2) As the chronically inflamed portion of the cervix is removed by this method what may be a potentially malignant area is destroyed.

(3) By rapidly decreasing the cervical discharge, which is always excessive in these cases, the vaginal exudation is allowed to resume its normal acid protective quality. This is most important from a bacteriological point of view.

(4) The operative treatment described has little or no effect on conception, pregnancy, or labour.

Medical Societies.

MEDICAL SOCIETY OF LONDON.

THE inaugural meeting of the session was held on Oct. 12th, when the new President, Sir HOLBURT J. WARING, delivered an address on

OSTEOPATHY, CHIROPRACTIC AND OTHER CULTS, AND MEDICINE.

The PRESIDENT said he had received many inquiries from medical friends as to what was the exact nature of osteopathy and chiropractic, what were the advantages to be derived from its employment, and what disadvantages and dangers were to be feared. Briefly, the so-called principles on which these cults were founded were as follows.

Osteopathy.

This was stated to be a system of treating disease without drugs, and was based on the belief or assumption that all disease was caused by some part of the human organism being out of proper adjustment or alignment, as in the case of a misplaced bone, cartilage, or ligament; or, in the case of adhesions or contractions of muscle resulting in unnatural pressure on or obstruction to a nerve or a blood- or lymph-vessel. Investigation had shown him, however, that the different practitioners of osteopathy had varying ideas as to what was comprised in the term and what were the limitations of treatment. A later definition seemed to include the use of the term "inhibition," or the relief of pain or spasm of muscles by the application of steady pressure. This cult was founded in 1873 by Dr. Andrew T. Still, in the State of Missouri. He declared that all disease was due to or dependent upon a disturbance of the nerves or blood-vessels in the different parts of the body, especially in relation to the nerves coming out from the spinal column; that disease was also due to impairments of circulation preventing vital materials reaching different parts and organs. Osteopathy was therefore regarded as a therapeutic measure for the treatment of all disease, and apparently it was a mechanical measure, consisting of making alterations in position and relations by digital pressure or manual manipulations of the supposed diseased parts. The abnormalities of the spinal column which these practitioners considered caused disease were termed "osteopathic lesions," and often they were said to be characterised by localised areas of tenderness and muscular spasm. The means of treatment adopted by the osteopath was manipulation to correct the so-called deformity or osteopathic lesion, to bring into proper apposition displaced bony surfaces, to relax muscular spasms, and to eradicate tender points.

Chiropractic.

This, said the President, had been defined as the philosophical science and art of things natural, and a system of adjusting the subluxated vertebræ of the spinal column by hand for the restoration of health. The cult was originated by a layman, D. D. Palmer, and he founded a school, bearing his name, at Davenport, Iowa, in 1895. His theory was that disease was the result of pressure upon nerves as they emerged from the spinal column, this pressure being assumed to be caused by the vertebræ being in an abnormal position. Palmer said diagnosis was not necessary for the treatment of disease; all that was needed was to relieve pressure on nerve roots. Diseases of eye and ear were treated by both osteopaths and chiropractitioners in a similar manner, even though the nerves supplying them did not come off from the spinal cord.

The President said that a number of other cults had sprung from these two, but he only mentioned one of them, naprapathy. The practitioner of naprapathy stated that the basal centres of life were all located in the medulla oblongata or basal portion of the brain, and the nearest portion of the surface of the body to the medulla was the nape of the neck, and therefore to this region the various manipulations were applied. No medicines were prescribed, and surgical instruments were declared to be unnecessary; only thumb-pressure and free rubbing with the heel or the fist. Thus all the cults mentioned based their ideas and practice on a primary dogma which was untrue. Following upon the setting up of these cults, a number of irregular medical schools had sprung up in the States, self-styled colleges. They were mostly proprietary, and run with the object of making private gain rather than supplying well-qualified practitioners of the healing art. Apparently the only essential elementary education insisted on at most of these schools was ability to read and write; laboratory instruction, in the modern acceptation of the term, did not seem to exist, and no hospital clinical facilities were available. At one of them an elementary graduate was given the degree "L. W.," and a further qualification was awarded the style "T. N.," which investigation showed to signify respectively, "Live wire" and "Top notch"! At one of the largest of these schools anatomy was taught by a lecturer who appeared never to have gone through a course of dissection of the human body, and she had no recognised diploma or degree. Here also one of the most prominent courses was one on "salesmanship." In this course, personality, personal magnetism and psychology, various forms of advertising, selling the patient and selling the services of the practitioner, were given. They taught that there was no necessity to carry out isolation for infectious disease, and declared that osteopathy was something which could not be learned from books; only by personal instruction given by a qualified osteopath. Most of the students in these schools seemed to have been drawn from among people of the poorer class who had received but little education.

The treatment by osteopaths and chiropractitioners seemed to be very similar, consisting mainly of applying the osteopathic thrust or thump. In some cases immediately after applying this thump the operator made a clicking noise with his tongue, announcing to the patient at the same time that the displacement had been reduced, but he was enjoined to take a course of the treatment to become quite well.

Dangers of these Methods.

The President said patients suffering from severe affections were liable to be seriously damaged by having these methods practised on them. In one case of appendicular abscess the forcible treatment was applied, the abscess ruptured, and the patient died. There were many cases in which these manipulations had caused acute dissemination of carcinomata and sarcomata, and he had also seen many cases of tuberculous disease of joints in which serious damage had been caused by forcible manipulation and movement. In the United States epidemics of infectious disease have been due to lack of isolation and the practitioners of these cults carrying the infection broadcast. It could be stated that these manipulations, in some diseases and abnormal conditions, did no harm, but in the majority of diseased and abnormal conditions considerable harm might be done, and in some cases the sequel was an irreparable injury. Some of the cures reported had probably been due to suggestion, others to the direct results of manipulations and the breaking down or separation of adhesions between muscles and nerves and the adjacent tissues. Patients were usually very averse to having anything rough or forcible done to them, and often, even in the presence of adhesions, the medical practitioner pandered to this and failed to carry out the obvious measures. The patient went to an osteopath, who had no such scruples, and his prestige was enhanced accordingly. Dr. F. Albee stated that he had never discovered, in all his experience, any foundation for the chiropractic theory, and, in his opinion, it was a menace to the public at large.

The Position of Osteopaths and Chiropractitioners in this Country.

In conclusion, the President pointed out that unless they possessed a medical qualification these people could only carry on their practices here as unqualified practitioners, and they were liable to prosecution for malpraxis. They were now seeking registration and recognition by Act of Parliament, desiring to be known as drugless healers, with limitations as regards practice. The speaker's own view was that our medical practice laws ought to be amended so as to place all practitioners of the healing art on the same educational level, because of the danger of the general public being deceived by a plausible theory and the making of unfounded claims; especially was this true in the case of sufferers who had grown desperate. A number of the graduates of the schools of these cults in the States had come to this country and set up practice, seeking to extend it by blatant advertisement. He thought the State should take a strong stand in protecting the health and preserving the life of the community.

Cordial thanks were tendered to the President for his address, on the proposition of Mr. **V. Warren Low**, seconded by Sir **StClair Thomson**.

Discussion.

Dr. **Des Vœux** thought quacks would continue to exist as long as the medical profession were unable to cure all ailments, and it could not be denied that on occasion a quack had "wiped the eye" of a general practitioner. He did not think it would be wise for the profession to try to discourage quackery, especially as he did not think quacks did the regular profession any harm.

Dr. **Eustace Callender** said he had seen many sad results of people going to quacks, even among people highly placed in society. He had seen three children, one after another, allowed to die of tuberculous meningitis without any steps being taken to protect them from the disease; they were only "treated" by a Christian Scientist. Such occurrences he regarded as wicked.

Mr. **J. E .H. Roberts** referred to a case of incomplete paraplegia in a man who was shot in the war. He recovered from that. Five years later he got work as a dustman, and after a short time of lifting weights of rubbish on to the dust-cart he began to get pain in his lumbar region, and this got worse. X rays showed a bony displacement, a subluxation of the second lumbar vertebra, but the bullet was harmlessly reposing in the muscle. He, the speaker, met a man who was an osteopath, a "D.O." of some place in America, and who was also a Licentiate of the Royal College of Physicians here in London, and asked him, as he said he cured subluxations of the spine, whether he could reduce it, showing him the radiograph. The answer was: "But that is a real subluxation; I should not advise you to touch that"; a decision Mr. Roberts had already arrived at. It well illustrated a mental attitude.

Mr. **V. Warren Low** did not agree with Dr. Des Vœux's eulogy of quacks, but he thought with that speaker that the medical profession should leave them alone. And he agreed that some Department of State should undertake the education of the public as to the general structure and functions of the body, so that imposition by specious claims would be rendered more difficult.

Dr. **E. G. Graham Little**, M.P., said the question of the recognition of osteopaths in this country would probably come before the House of Commons quite soon, in response to a meeting which was held in Parliament six months ago, and convened by an influential body of members who favoured osteopathy. That meeting was addressed by a qualified medical man who had forsaken the ordinary practice of medicine and had taken up osteopathic methods. The meeting was attended by all the medical members of the House at the present time, and several of them tried to obtain a hearing. After the hour's conversation by the medical man referred to, other speakers were allowed three or four minutes, and were then told that the company present did not desire any further information from the medical point of view. The resolution, submitted by the promoters, was carried. The Ministry of Health seemed to be most sympathetic to this movement, therefore the opposition must, he thought, come more from the general body of the medical profession, and some notice ought to be taken of the fact that the speaker for the meeting was himself a duly qualified medical man. The opposition should not be an official one organised by any great body, but among the profession itself.

The **President**, in a brief reply, said he thought it was the duty of every Government to protect its citizens from fraud. To recognise and allow to register practitioners of these cults in this country would mean the incursion into the ranks of healing of men with very little general education and training.

ROYAL SOCIETY OF MEDICINE.

SECTION OF OPHTHALMOLOGY.

A meeting of this Section took place on Oct. 9th, when Sir **Arnold Lawson**, the President of the Section, occupied the chair.

Penetrating Injuries of the Eye.

Mr. **J. Gray Clegg** (Manchester) initiated a discussion on this subject, his attempt being not to range over the different varieties of perforating injuries and their treatment, but to deal with some practical and interesting points. During his 25 years at the Manchester Royal Eye Hospital nearly 213,000 cases of accident had been treated, and 1448 of those had been in-patients under his care. There were among them 859 cases of penetration or rupture of the globe. The fullest possible history of cases of penetrating wounds should be obtained, and it must be determined whether complete penetration has taken place, and whether the mechanical agent has been withdrawn or still remains in the eye. When examination by ordinary methods failed, perforation could often be proved by means of the slit-lamp.

First as to the *cornea*. If the wound in it was small and aseptic, he said, no active surgical treatment was required. If the iris was prolapsed or caught in the deeper part of the wound, a foreign body was not likely to be still retained. If there was no such prolapse there was a greater probability that the foreign substance was still in the eyeball. For prolapsed iris the operator could do either (1) reposition through the wound (often unsuccessful); (2) reposition by making a small corneal incision with a keratome at a point 180° from the wound, and passing in an iris repositor or blunt hook, and separating the iris from the cornea by traction; or (3) excision of the prolapsed portion, which is the usual method he had followed. If the decision reached was to excise the prolapse, he advocated, in suitable cases, the use of small, fine-ribbed capsule forceps, especially when the iris had become friable owing to inflammatory changes a few days after the accident. When the corneal wound was large and tended to gape he favoured suturing the cornea, using Webster Fox's slit-ring forceps. Horse-hair or the finest silk-worm gut were the suture materials he recommended. In some cases it was an advantage to raise the conjunctiva at the corneal limbus, undermine it for some distance, and so suture it that the wound was well covered. For ragged and irregular wounds a conjunctival covering was desirable, and for this he suggested the Nuel suture. He discussed the disadvantages of suturing the conjunctiva over the wound. When there has been a delay of several days before the ophthalmic surgeon is consulted Mr. Clegg said that immediate operation was sometimes needed, but each case must be decided on its merits. Where iris was prolapsed or adherent to the corneal scar, and in two or three weeks the eye was quiet, in most cases operative interference should be undertaken to relieve dragging. This could be done by one of three methods: (*a*) An iridectomy at a position diametrically opposite the site of the wound; (*b*) an iridectomy at either side of the anterior synechia; (*c*) complete severance of the attached portion from the rest of the iris, with or without partial iridectomy.

Mr. Clegg next discussed the question how far it was safe to leave a traumatically produced anterior synechia in a quiet eye months after an accident. Mere perforations or clean cuts were left to recover as best they could. Wounds of the lens, associated with penetration of the globe, always complicated matters if there was anything more than a fine tear in the capsule not large enough to allow aqueous to invade the substance. With regard to the question as to whether it was advisable to remove lens substance when there was a recent wound of the cornea, he thought extraction (when there was a hard nucleus), or expression through the original wound, or lavage, or suction of the soft cortex should be done when there was extensive rupture of the capsule, as the presence of lens substance in the anterior chamber increased the possibility of sepsis, diminished the osmosis at the filtration angle, and might even lead to endophthalmitis phakoanaphylactica. But when the corneal wound was not large and the lens substance not greatly swollen, the removal of the lens could be left to absorption in a young subject, or to a later extraction in a person over 30 years of age. If vitreous protruded into the anterior chamber little could be actively done except when it prolapsed through the corneal wound. The prolapse should be snipped off and the eye protected against infection.

When the wound was at the corneo-scleral junction or in the sclera the case was more serious, but there was no longer fear of the "danger zone." If ciliary body or choroid were prolapsed it could only be excised. Even large clean wounds of the sclera might heal well and a useful eye be retained. Covering with conjunctiva was desirable in all cases, and the edges of the sclera could be brought into contact by Nuel's suture; it was rarely necessary to pass the suture material through the whole thickness of the scleral tissues. One late effect of even the cleanest wounds of the sclera might be detachment of the retina, and the question was, Could anything be done to prevent this? If wounds of the sclera were of some days' or even weeks' standing, questions arose other than those connected with the wound itself. In all extensive perforating wounds of the globe it was necessary to consider whether recovery was possible with the retention of a globe which would have useful sight and would yet not be a threat to the fellow eye. It was, he thought, rarely wise to condemn an eye to evisceration or excision as soon as it was seen to have suffered. At least a week should be allowed to pass before condemnation was pronounced, and there was practically no fear of sympathetic trouble during that short time. He asked the opinions of members as to whether any good resulted if an exciting eye was removed when sympathetic disease had already started in the other eye.

With regard to foreign bodies penetrating and remaining on the globe, these were divisible into magnetic and non-magnetic, and both could be classified into radio-opaque and radio-transparent. The first named could be accurately localised by the methods of Mackenzie Davidson or Sweet. Sometimes the foreign body could be seen on focal illumination by the ophthalmoscope, or it was evident on trans-illumination. If a non-magnetic substance, such as glass, was causing no obvious irritation it could sometimes be safely left. Chemically irritating substances, such as copper, eventually led to loss of the globe, hence every possible effort at removal of such materials must be made. Magnetic substances were best removed by the magnet, for siderosis and opacity of lens might otherwise ensue. If the iron or steel fragment were in the anterior chamber, or even in the iris tissue or in a wounded lens, it could usually be extracted through the original wound, though sometimes this wound had to be enlarged. If the fragment was embedded in the iris tissue it was, he considered, good surgery to make the incision over its position and cut off the damaged iris with the imprisoned chipping.

Dealing with other aspects of the subject Mr. Clegg said that excision of a suppurating lacrymal sac was important.

Mr. G. H. POOLEY (Sheffield) said that as a result of many years of experience and consideration he had arrived at the conclusion that the ophthalmic surgeon was justified in applying conservative modern measures to the eye when that organ had received a penetrating wound, and that this policy should replace the more anxious one which in the past had led to many eyes having been excised within a few days of the accident happening to them. Even mild sepsis of the eye could be successfully dealt with, and a blind quiet eye was a better possession than an artificial eye. He divided penetrating wounds of cornea or sclera or both as follows: (1) Without prolapse of iris or other tissue and without the retention of a foreign body or injury to the lens. (2) With prolapse of iris or other tissue but without retention of a foreign body or a lens injury. (3) With or without prolapse of iris or other tissue or injury to the lens, but with the retention of a foreign body within the eye. (4) The last named and injury to the lens in addition. These he discussed in some detail, making the following points. A straight clean cut of less than 4 mm. in length seldom gaped much, whether it was in cornea or sclera. A wound longer than this should be closed; if in the sclera by the finest 30-day catgut, the sutures picking up the outer layers of the sclera about 1 to 2 mm. from the wound on each side, and so tied as to invaginate the cut edges of the sclera and hold them fairly tightly in apposition. To the conjunctiva should be applied buried catgut sutures. He used a slightly curved needle about 10 mm. long. A gaping corneal wound could be kept in place by indirect suture. In the cases in which a part of the iris was prolapsed, the portion should be picked up, gently pulled a little further out of the wound, and cut off. Prolapsed portions of ciliary body, choroid or retina, and beads of vitreous should be cut away. Foreign bodies should be removed by the nearest and easiest route. Even if such foreign bodies should be septic, they could be retained for a long time without causing trouble, though they should be removed as soon as their exact site had been determined. He had successfully removed glass and steel fragments from eyes in which they had been reposing for years. Dealing with injuries to the lens, Mr. Pooley advocated well washing the eye out and removing as much of the injured lens as possible, to prevent it from swelling and adhering to the wound afterwards. His rule was to try to save every eye, however badly damaged, deferring his decision as to enucleation until about the third week. If vision was never likely in an eye, and it was the seat of keratitis punctata, he removed it. The question of sympathetic ophthalmia Mr. Pooley discussed in some detail, remarking that no eye should be taken out within the first fortnight; he also entered into a description of the technique of scleral suture.

Mr. CHARLES GOULDEN spoke of the treatment of certain difficult cases of prolapse of iris, and of non-magnetic foreign bodies present in the anterior chamber. The method was to make a small incision opposite the perforating injury, 3 mm. in width, so as to admit a repositor. Then the prolapsed iris was dealt with. If any portion of iris remained entangled in the wound, the repositor could be passed through the eye so as to disengage it. With regard to the treatment of large perforating wounds, especially those which perforated the sclera, he thought, contrary to Mr. Pooley's view, that it was unnecessary and dangerous to insert scleral sutures, because of the likelihood of loss of vitreous. When a serious injury was followed by a gaping wound, a good plan was to make an incision round the conjunctiva, then draw the conjunctiva over the wound, and so close it. He discussed the technique of removing magnetic foreign bodies by means of the electro-magnet.

Mr. M. H. Whiting pointed out the advantages of the Haab magnet over the Mellinger for the extraction of magnetic substances from the eye. The horse-collar of the latter instrument, its smaller power compared with that of the Haab, as well as the difficulty of preventing it touching the eye when being used, were among the factors mentioned.

Mr. Elmore Brewerton said his practice when he encountered prolapse of iris was to make an incision less than 90° from the wound before dealing with the prolapsed iris.

Mr. T. Harrison Butler said he had been using the Mellinger magnet for 15 years and had not seen the disadvantages from it which Mr. Whiting mentioned. With regard to sympathetic ophthalmitis, he considered that by removing the exciting eye in the early days many eyes would be saved. But it was necessary to keep careful watch with the slit-lamp. If the latter showed commencing danger he at once instituted the treatment as for actual ophthalmia. This had resulted in the saving of several eyes.

The President said that while it was true that an eye could safely be retained a fortnight or so without risk of sympathetic ophthalmia, he recently had a case in which that complication ensued ten days after an apparently trivial injury, accompanied by keratitis punctata, so that the eye had to be excised.

Mr. Clegg and Mr. Pooley replied.

Clinical Cases.

Mr. J. D. M. Cardell showed and carefully described a case of Kruckenberg's spindles in a single woman aged 30. By means of the slit-lamp Miss Ida Mann found that the pigment was in the posterior layers of the cornea; it seemed to consist of a multitude of closely-set brown rings. Thomson and Ballantyne regarded the condition as congenital.

Mr. Pooley showed two cases of punctured wound of the cornea, in association with his remarks in the discussion of that subject.

Reviews and Notices of Books.

HANDBOOK OF DISEASES OF THE THROAT, NOSE, AND EAR.

Edited by A. Denker (Halle) and O. Kahler (Freiburg). Vol. I., Diseases of the Air-passages and Mouth: Anatomy, Development, Physiology, Methods of Examination. Berlin: Julius Springer; Munich: J. F. Bergmann. 1925. Pp. 1068. M.84.

This volume is the first of a great work which, when complete, is to consist of nine volumes. Of these the first five will deal with the upper air-passages, the next three with the ear, and the last with the thyroid and thymus glands and external structures of the neck. No fewer than 120 authors are concerned in this work, of whom 21 contribute to the present volume. This, consisting as it does largely of the spade-work preliminary to the actual description of diseases and their treatment, is perhaps less intrinsically interesting to the practising laryngologist, but it presents an extremely thorough foundation for what is to follow. Even the comparative anatomy of the nares, fauces, and larynx, as well as their embryology, is described and illustrated, that of the nares being particularly good. In the section on physiology the physical characteristics of odorous substances, and the conditions which influence their absorption, are well explained by Prof. Zwaardemaker, of Utrecht, who, indeed, covers the whole subject of olfaction, of which he has made a special study. Similarly, Prof. Skramlik, of Freiburg, deals at length with the sense of taste. The chapters on methods of examination are likewise full of detail, but here a certain narrowness of outlook becomes apparent. Under anterior rhinoscopy only one speculum, Hartmann's, is advised and illustrated; of bronchoscopic methods, distal illumination is dismissed in five lines as unsatisfactory, and Chevalier Jackson is not mentioned, except in the list of references at the end of the chapter. Indeed, the workers of other countries receive throughout scant recognition. The book is provided with a good index, a detailed table of contents, and a long list of references at the end of each chapter. There are 709 illustrations, all good, and some of them, notably the photomicrographs, are beautiful examples of colour printing. As a work of reference this volume will be of great value to specialists.

THE MIND IN HEALTH AND DISEASE.

An Introduction to the Mind in Health and Disease. For Students and General Practitioners interested in Mental Work. By T. Waddelow Smith, F.R.C.S., Deputy Medical Superintendent of the City Mental Hospital, Nottingham. London: Baillière, Tindall and Cox. 1925. Pp. 235. 10*s.* 6*d.*

In setting out to write an introduction of this kind Dr. Waddelow Smith has undertaken a difficult task. Such a book must of necessity be elementary, but even so, the author surely underrates the equipment of his readers, who are presumed to be medical men and students, in a passage such as the following, from the anatomical description of the central nervous system:—

> "The membranes . . . are continued all over the cerebral hemispheres and have between them and the nerve cells of the hemispheres a layer of cerebro-spinal fluid, so we find the little nerve cells, all over the surface of the brain and also at its base and in its substance, are bathed by this nourishing fluid by means of the layer just described and the ventricles."

In the section dealing with mental disorders the author has a considerable experience of mental work behind him, and there are many practical hints which should be valuable to the beginner. But here the purely Freudian definition and interpretation of the morbid phenomena is to be deplored. It is hardly a generally accepted view, for example, that the anxiety neurosis is "characterised by the failure of the individual properly to adjust his or her somatic and psychic sexuality." In an introduction to what will be of practical utility it is very important that the reader should be guided aright, and we do not feel that this book can be wholly recommended as a help in difficulties.

Old and New Viewpoints in Psychology. By Knight Dunlap, Professor of Experimental Psychology in the Johns Hopkins University. London: Henry Kimpton. 1925. Pp. 166. 10*s.* 6*d.*

There is a growing number of practitioners and laymen to whom psychology is an extremely interesting side-line. It may require a great deal of patience, as well as previous knowledge, to read appreciatively an exhaustive text-book, and many readers are content to derive their knowledge from small synopses of more or less doubtful authority. Prof. Knight Dunlap's book is a very good example of this "popular" class of work on psychology, while it carries exceptional weight, for the author is well known as a conscientious teacher. The five articles were originally delivered as lectures; those on mental measurements and present-day schools of psychology are dull, but give an impartial survey of recent progress in both these subjects. The psychology of the comic is a good piece of constructive reasoning on a subject of universal appeal, and the article on spiritualism is less speculative and carries a sober warning with it. The last, on the reading of character from external signs, is frankly negative. On the whole, the book shows the defects of any random collection of articles or lectures. It lacks vitality and coherence, besides which the writer is too dogmatic for such a controversial subject.

THE EMOTIONS.

Experimental Investigations into the Emotional Life of the Child Compared with that of the Adult. By HELGA ENG, Oslo. Translated by GEORGE H. MORRISON, M.B. Edin. London: Humphrey Milford, Oxford University Press. 1925. Pp. 243. 21*s.*

A LARGE amount of work has already been done in measuring the physical concomitants of emotion, and in the book before us Miss Eng sets out to answer the question whether psychical experiences of a definite character are accompanied by definite changes in the volume-pulse curve and in the respiratory curve, and, secondly, whether such changes in children might indicate a feature peculiar to the child's emotional life. Using the kymograph, the pneumograph, and the plethysmograph, the author finds that the emotions dealt with in the experiments can be arranged in three pairs, each pair showing opposite expression changes on the recording instruments; attention and activity, displeasure and pleasure, depression and excitement are thus opposed, the first mentioned in each pair being marked by a fall in the volume curve, decrease in pulse height, retarded pulse, and retarded respiration, whilst the second shows opposite changes. In experiments on the effect of stimuli no difference was found between children and adults, but a phenomenon, which at first sight might be expected to vitiate the experiments, proved to be of interest. The spontaneous emotional state of the subject, as revealed by introspection, often found expression in the curves, and it is here that age differences became manifest, for spontaneous emotions were, in the case of children, mostly related to sensory impressions, whilst in adults they were more often connected with events of greater personal psychical content; moreover, in these spontaneous emotions, pleasure is more notable in the child and displeasure in the adult. The author concludes with an expression of the opinion that the physiological processes concerned are "definitely dependent on the psychical processes, and not the other way round." About half the book is taken up by tabular records of experiments, and nine plates are devoted to reproductions of actual tracings. To describe laboratory investigations of physiological reactions as an investigation of the emotional life of the child may disappoint those readers who regard that emotional life as made up largely of personal problems and the inter-play of instinctive tendencies. But to say so is in no way to belittle the value of this record of conscientious work. The translator has done his part well, and the book will interest all who are concerned with youthful behaviour.

PHYSICAL SIGNS.

Perkussion und Auskultation. By Dr. HERMANN VIERORDT, Professor of Medicine at the University of Tübingen. Berlin and Vienna: Urban and Schwarzenberg. Pp. 95. M.2.

THE author of this little book has succeeded in condensing his information so well that practically all the student may require to know about percussion and auscultation (as far as they can be acquired from a book) is to be found in these 95 pages. Other parts of the body besides the chest are dealt with as far as their examination by percussion and auscultation is concerned, and the reader is taught how to distinguish between ascites and an ovarian cyst, and how to percuss such organs as the kidneys when they are displaced from their normal site. A book like this is useful to the busy practitioner who, without it, is apt to fall into slipshod ways and to simplify his technique to the vanishing-point. Under such circumstances a small book, which will slip into an overcoat pocket, may jog its wearer's memory, reminding him of those diagnostic methods from the practice of which, owing to pressure of time and want of contact with his fellow practitioners, he has lapsed.

TUBERCULOSIS.

Diagnostik und Therapie der Knochen- und Gelenktuberkulose. Second edition. By Dr. EUGEN KISCH. Leipzig: F. C. W. Vogel. 1925. With 6 tables and 367 illustrations and charts. Pp. 296. M.20; bound, M.23.

THIS profusely illustrated work comes from the Hohenlychen Institute for Surgical Tuberculosis, attached to the University Surgical Hospital of Berlin under the direction of Prof. A. Bier. Hohenlychen may be said to be to Germany what Alton is to England; and, like its English counterpart, Hohenlychen is a standing demonstration of the fact that heliotherapy is not a monopoly of the Alpine and sub-Alpine levels. It is an institution where a great variety of therapeutic measures serve the patients' needs. Hohenlychen makes considerable use of treatment by passive congestion, and those who have abandoned this form of treatment in surgical tuberculosis may wonder if the success of hyperæmia at Hohenlychen may not be due to the many other remedies provided there. The guiding principles of Hohenlychen are that surgical tuberculosis is a disease for conservative treatment, that success can be achieved at any altitude, and that only in exceptional cases should the surgeon resort to the knife. The book is divided into two parts, general and special. The former deals with the physiology of pigmentation, the experimental foundation of the combined treatment with sunlight and hyperæmia, the actions of various forms of artificial light, and the technique of their administration. Information is given as to the action of iodine taken by the mouth in association with passive hyperæmia, and as to the improvement to be effected in the general condition of debilitated patients by the intravenous injection of the blood of mammals other than man. In the special part, an account is given of the disease as it affects each structure, and a whole chapter is devoted to a study of the re-absorption of tuberculous sequestra. The book is a valuable summary of modern German teaching.

Contributions to the Study of Tuberculosis by the Research Department, National Jewish Hospital for Consumptives. Denver, Colorado. 1924.

THIS large volume, which is the fifth of the series, is a collection of the papers published by authors associated with the Research Department of the National Jewish Hospital for Consumptives. The earlier papers deal with the problems of tuberculosis in a more or less general manner. Several papers on research follow, and the last seven contributions are clinical. Most of the papers published in this volume have already appeared in some American or English journal, but the volume will serve the useful purpose of showing the patrons of the hospital the very considerable output of the Research Department.

Recovery Record for Use in Tuberculosis. Second edition. By GERALD B. WEBB, M.D., and CHARLES T. RYDER, M.D. New York: Paul B. Hoeber, Inc. 1925. Pp. 79. $2.

THE first half of this book contains hints on how to recover from tuberculosis, and the second half contains charts on which the patient is invited to record his temperature, pulse, weight, general notes, and questions for his physician. On each page, above and below the chart, there is a proverb intended to give the reader a hint as to how to think and live. Both the advice given in the first half of this book and the proverbs quoted in the second half show that the authors attach more importance to rest than to any other factor in recovery from tuberculosis. To the advocates of exercise as a method for treating tuberculosis is addressed the following quotation from Trudeau: "I know I have hurt nobody by rest, but I am quite sure I often have by allowing them to exercise." Solly is quoted as having said: "The wise have four times as good a chance to recover as the foolish." This is surely an over-estimate of the fool's chance.

Tuberculosis: Its Prevention and Treatment. By J. Laird, L.R.C.S. & P.I. Second edition. Bristol: John Wright and Sons, Ltd. 1925. Pp. 130. 5*s.* 6*d.*

The chief feature of this little book is its advocacy of calcium in the prevention and cure of tuberculosis. Calcium, it would seem, is the key to the problem, not only of tuberculosis, but also of such diseases as cancer. In the first instance its influence is beneficial, in the second it is detrimental, for "cancer is chiefly a disease of advanced life, when the salts of calcium are in excess in the system, and may act as the predisposing cause of the disease." Medical readers may doubt whether the solution to complex problems can be so simple as the author thinks.

Veterinary Diagnosis and Treatment.

By G. E. Jorgenson, A.B., M.D., N.D.V., former State Veterinarian of Iowa; Consulting Pathologist and Associate Editor, *North American Veterinarian.* London and New York: D. Appleton and Co. 1925. Pp. 441. 12*s.* 6*d.*

The author is evidently well informed and always gives a reason for the conclusions he forms and the treatment he adopts. This somewhat uncommon practice should appeal to readers who wish to be rational. He gives 132 case reports of wide range; his treatments seem to have brought about a high proportion of recoveries. Case 8 (fibrinous pneumonia in a horse) and Case 10 (pneumonia in a cow) seem to have been treated, contrary to orthodox practice, by purgatives. However useful in bronchitis they should be given cautiously in serious pneumonia. It is somewhat surprising to learn that the author has never heard of epilepsy in swine; convulsions, falling, and foaming at the mouth are common, and although they may not be signs of true epilepsy they are certainly epileptical. We do not agree that the diagnosis of cæcal impaction is easy, and the action of drugs is modified by the fact that the cæcum is a cul-de-sac undisturbed by the flow in the main tube. Impaction of the colon often follows impaction of the cæcum. It is impossible to commend the autopsy of the cow with anthrax (p. 282 et seq.), for which the two cases that developed later may well have been responsible.

There is much sound reasoning in this book, and it is well produced. We prefer the author's description of its objects to the publisher's statement that it is "a standard practical guide for all farmers." Farmers would remain uninterested in the sino-auricular node of Keith and Flack, polynuclear neutrophiles, and basophiles.

JOURNALS.

Quarterly Journal of Experimental Physiology. Vol. XV., No. 2.—Corpus Luteum Extracts and Ovulation in the Rabbit, by Walter P. Kennedy. It is now a generally accepted theory that at least one of the functions of the corpus luteum is the prevention of ovulation so as to maintain the rhythm of the œstrous cycle and to avoid superfœtation in pregnancy. There is a considerable amount of clinical evidence that extracts of corpus luteum exert a specific action on the functional activity of the ovary. Extracts were made from a powdered desiccated product and shaken up with the required amount of saline, or fresh extracts were made from corpora lutea dissected out from fresh cow ovaries. The injections were given in the marginal vein of the ear or in one of its larger branches. The general picture of the histological findings was one of degeneration and inhibition of the cyclical changes. The general results are that a substance or substances can be extracted in the cold from the corpus luteum of the cow in the fresh or desiccated state, which inhibits ovulation in the rabbit if injected intravenously in sufficient dosage.—The Significance of the Elastic Tissue in the Human Fœtus, by Evelyn E. Hewer. The wide distribution and early appearance of tissue with a great affinity for elastin stains indicates that this type of tissue plays an important part in the functional development of many organs; its appearance is in certain cases correlated with the time at which functioning of the organ begins.—The Action of Pituitary Extract on Urinary Secretion, by Nicholas S. Craig. Ox pituitary (posterior lobe) was used. The author found that in anæsthetised animals, intravenous administration of the extract produced a definite diuresis. Continuous intravenous administration of pituitary extract in 0·9 per cent. saline solution produces the same result. In unæsthetised dogs pituitary extract administered subcutaneously controls the diuresis which normally would result from the administration of water or normal saline by the mouth. If concentrated saline solution is used diuresis results. The author also deals with the action of pituitary on the absorption of fluid from the alimentary canal and on the blood composition. There are further studies on the pituitary by Launcelot T. Hogben on the "Avine Depressor Response," who finds that the substance present in pituitary extracts causing a powerful depressor response in the bird is a specific property of the fresh gland substance; it does not belong to the category of capillary poisons common to extracts of many tissues, and has no connexion with the histamine-like substance responsible for the secondary fall in carnivora, and seems pre-eminently associated with the pars nervosa; it is present in the pituitary of fishes, amphibia, reptiles, birds, and mammals. Another paper by the same author and Gavin R. De Beer deals with Localisation and Phyletic Distribution of Active Materials in the Pituitary.—The Reactions of the Pupil in the Chloralosed Animal, by R. J. S. M'Dowall. The author observed that if an animal such as a cat be anæsthetised with chloralose the pupil remains of normal size, but is extremely sensitive and rapid in its reactions. The reactions of the pupil give not only an indication of the state of the autonomic nervous system of the animal, but they may be utilised as an index of sensation, not only from areas supplied by the spinal nerves, but also from those supplied by the autonomic nervous system, and as a means of tracing out the paths of afferent impulses in the sympathetic nervous system.—R. J. S. M'Dowall and B. L. Worsnop describe new methods of demonstrating changes in the tone of the arterioles.—W. G. Millar records observations on the hæmatocrite method of measuring the volume of erythrocytes, showing that the speed of centrifuging has an important bearing on the accuracy of measuring the volume of erythrocytes by the hæmatocrite.—A. D. Macdonald, in describing the action of pituitary extracts on intestinal muscle, throws doubt on the commonly held view that the pituitary gland contains a general stimulant of plain muscle-fibres.

Somerset's Mental Defectives.—Sandhill Park, Bishop's Lydeard, formerly the seat of Sir W. P. Lethbridge, was last week opened as a home for the mental defectives of the county of Somerset. The house, built in 1720 by Sir Thomas Lethbridge, and about 150 acres were bought for £16,000, and the building has been adapted by Sir George Oatley, the architect of the new extensions of Bristol University. There is at present accommodation for 119 patients, but the estate is ultimately to be developed into a farm colony for the feeble-minded.

IMPERIAL SOCIAL HYGIENE CONGRESS,

WEMBLEY, OCT. 5TH–7TH.

(Concluded from p. 778.)

ON the afternoon of Tuesday, Oct. 6th, the conference discussed

Social Hygiene in Relation to the Mercantile Marine.

In the absence of Sir George Buchanan, Dr. F. J. Coutts, of the Ministry of Health, introduced a paper prepared by them, in which they mentioned the difficulties met with in trying to treat seamen who moved from place to place. The problem was especially important in view of the part played by certain seaport towns in spreading venereal diseases. International agreement was clearly desirable, but there had been many obstacles, including the system by which in some countries seamen or shipowners were expected to bear the cost of treatment; the difficulty of making a man's case papers intelligible to the medical staff at foreign ports; and the practical difficulty of how to express the results of Wassermann tests. The inquiry into this last had led to the recent researches at Copenhagen into the comparative value of different blood tests for syphilis. The agreement on the international treatment of venereal disease had been signed by Argentina, Belgium, Cuba, Denmark, Finland, France, Great Britain, Greece, Italy, Monaco, New Zealand, Peru, Roumania, and Sweden. The United States was not prepared to adhere to the agreement, but in practice it was hoped that satisfactory arrangements would be made. It was greatly to the credit of the British Social Hygiene Council that the agreement was a practical instrument rather than a mere sign of theoretical unity of purpose. Medical facilities were to be provided free for seamen in the chief ports of the contracting parties; specialist officers were to be available in the clinics, and a card which could be universally understood was to be used. Experience had shown the scheme to be useful and exemplary arrangements had been made at Liverpool. Seamen going abroad were to be furnished with a list of treatment centres elsewhere.

A paper was read for Mr. M. R. K. Burge describing the work of the Joint Maritime Commission set up by the International Labour Office in coöperating with other national and international bodies in the campaign against venereal disease among seamen. Although pleased with the steps taken by Governments to provide treatment, the Commission hoped that such activities would not obscure the necessity for preventive measures. A report on prophylaxis was, he said, being got ready by the International Labour Office.

Welfare Work for Merchant Seamen.

Fleet-Surgeon W. E. Home said in his paper that the valuable services of seamen to the community entitled them to more care. Their occupation, which early removed them from home and its training, was quite exceptional amongst trades, and so were their risks and discomforts. The last official statistics, dealing with the years 1900–02, showed that seamen had nearly twice as many deaths per 1000 as "all occupied males" in England and Wales, and four times as many deaths from accidents. The accident death-rate was double that of coal-miners. Most workmen lived in communities with other people, their health being watched by sanitary authorities; but the merchant seamen had no one specially to look after them and report on their conditions. The United States saw that its men were vaccinated, inoculated against typhoid, or given quinine; but in spite of heavy mortality nothing of the kind was done in England. Accidents and their prevention seemed unconsidered. The problem of venereal disease amongst seamen was the result of a vicious circle. The want of home influence led to drink and mischief; they led to infection, and infection might prevent the man ever having a home of his own. In 1924 the Seamen's Hospital at Liverpool had handled 438 new cases, of which 169 were syphilitic. After referring with admiration to the work of the late Miss Agnes Weston, he said that everything preventing aimless idleness—gymnasiums, entertainments, concerts—must be encouraged, and the Social Hygiene Council was arranging for sports grounds near harbours.

[An analysis by Fleet-Surgeon W. E. Home of the causes of death amongst merchant seamen appeared in THE LANCET of Oct. 3rd, 1925.]

Arrangements in the Empire.

Dr. C. L. Park's paper gave an account of arrangements in Australia by which every seaman reported as infected was taken in charge by the quarantine authorities during the whole time his ship stayed in Australian waters. Hospital beds and specialist treatment were provided for him, and on his removal to another port the treatment was continued there. The Australian laws ensured that infected seamen were kept under observation until their disease had ceased to be infective; but the facilities did nothing towards preventing fresh infection being incurred by the healthy, though recreation was available in certain ports.

Major H. B. Jeffs contributed the information that Canada imposed a fine of $200 for any emigrant brought to a Canadian port of entry suffering from a venereal disease, any such emigrant being deported at the steamship company's expense. Persons rejected for venereal disease might not apply again for entry. He described the free clinics for seamen at Canadian ports, stating that there were 56 free venereal clinics in operation in the Dominion, besides other institutions; about 330,000 treatments were given in a year. Prisoners entering reformatories and gaols were subjected to a Wassermann test and treated if necessary.

Sir Claude Hill assured the Congress that the Red Cross would give all possible help in propaganda. Dame R. Crowdy thought that the Congress had concentrated too much on the technical side of prevention and not enough on the moral factors.

White Slave Traffic.

Mr. S. Cohen read a paper on the suppression of the white slave traffic. He said that it had gradually been reduced to very small proportions because the steamship companies refused to carry the women and the Home Office refused to let them land in England. He hoped that tolerated houses would be put down everywhere; if this were done there would then be no traffic. It was a great advance that Hungary and France had refused to allow any foreign women into their tolerated houses, and perhaps the other Latin countries would follow this lead.

Mrs. Neville Rolfe appealed to Mr. Bascom Johnson (Director of Special Inquiries for the League of Nations) to say whether venereal disease had any special relation to licensed houses. Mr. Johnson replied that they prevailed in the same areas, but investigation of relationship was still incomplete. Prostitutes were in the habit of following the American fleet to Panama for its winter manœuvres; if there were no brothels in which they could find lodging they would not go.

Dr. David Lees complained that a British seaman kept in hospital at a place like Port Said would lose his ship and his pay; and as there was no British Consul there he would be worse off than a foreign sailor in a British port. There should be Government subsidy to set up sailors' homes in every port. The State, through the local authorities, should provide 75 per cent. of funds. He mentioned that Edinburgh was to be invited to build such a home.

Surgeon-Commander T. B. Shaw attributed most venereal disease to drink, and Mr. E. B. Turner, in supporting the plea for sailors' homes, recalled old London conditions.

After the meeting a film dealing with venereal disease was exhibited.

Treatment of Venereal Disease in England.

At the morning session on Wednesday, Oct. 7th, Sir Kingsley Wood, Parliamentary Secretary to the Ministry of Health, who presided in the absence of Mr. Neville Chamberlain, said that the Government had not been ungenerous in meeting 75 per cent. of cost involved in treating venereal diseases. There were to-day 193 treatment centres in England and Wales, and there were 14 hospitals approved for the accommodation of women and girls and seven special institutions for infected pregnant women. There was much evidence of the increasing willingness of people to come forward for diagnosis. Since the inception of the present scheme in 1917 more than 600,000 persons had attended the treatment centres, of whom about 120,000 were found to be suffering from venereal disease. Since 1920 there had been a steady decline in the total numbers of new cases of infection dealt with at the centres. In 1924 there were only 22,010 new cases of syphilis as compared with 42,805 in 1920, and 31,272 cases of gonorrhœa, compared with 40,280 in 1920. The number of attendances at the clinics during 1924, however, reached a total of about 1,650,000, the highest on record, which meant that the average number of attendances per case had increased and that the importance of persevering in treatment was increasingly recognised. The percentage of cases which ceased attendance at the clinics before their course of treatment was complete had fallen from 47 in 1921 to 39 in 1924. There seemed to have been a definite diminution in syphilis and gonorrhœa during the past five years. The expenditure of local authorities on schemes for diagnosis and treatment had fallen from £450,000 in 1921–22 to £388,000 in 1923–24, and a further drop was expected this year. The saving was due to improved arrangements at the centres and more economical working. Turning to the subject of notification, Sir Kingsley Wood said that so far as experience had been obtained it had not shown that its advantages would outweigh its disadvantages. One city, Bradford, had an Act which required the notification of certain classes of cases, but did not empower the local authority to take any action on receipt of the information. In Canada and Australia legislation was in force setting up conditional notification. In wishing the conference Godspeed he said that one of the tragedies of the present situation in this country was that in 1924 over 5000 persons under 17 years of age had to be dealt with for the first time.

Colonel L. W. Harrison, of the Ministry of Health, said that the report of the Royal Commission in 1916 had stated that the number of syphilitics could not be less than 10 per cent. of the population in the large cities, and his own investigations had led him to suppose that the incidence of gonococcal infection was about three times that of syphilitic. It was estimated that the annual number of venereal disease infections before 1916 was not less than 200,000, but since then there had been provision of efficient treatment and of education. He believed that a very high proportion of cases of syphilis reported themselves, but not so high a proportion of cases of gonorrhœa. In England, as in all other countries where there were good facilities for treatment available, there appeared to be a very remarkable reduction in the incidence of syphilis; but he did not think that any very great reduction in gonorrhœa could yet be expected. The treatment was harder, and to stop the infectivity of the patient was harder; the fight against this disease would be long and difficult. The cost of the present schemes of treatment was about 2½*d.* per head of the population per annum, and a minimal estimate of the ultimate saving showed how economical this was for the nation. A manufacturing concern in Virginia had installed a free venereal clinic for its employees at a cost of $6000 for the first year and had later reported that labour efficiency had increased by one-third, which gave a return of $40,000 yearly for the investment. After pointing out the advantages of clinics being open all day, especially for women with gonorrhœa, who are preferably treated daily by a nurse, Colonel Harrison referred to the necessity of preventing ophthalmia neonatorum and congenital syphilis by taking forethought. He wished to awaken all branches of the medical profession to the fact that congenital syphilis was a horror, and its incidence a reproach. The instruction of medical students gave far too little knowledge of early venereal disease. The curriculum need not be further loaded. Was it not better to spend a few hours learning to treat syphilis in its first stages than to devote many to the pathology, signs, symptoms, and prognosis of the horrible consequences of early neglect?

Progress in the Dominions.

The position throughout the Dominions was then reviewed. Dr. C. L. Park (Australia) pointed out that venereal disease was now being looked upon as a general public health problem. Dr. B. Colquhoun drew attention to the fact that not the least of the evils of the war had been the loosening of social behaviour, and that such institutions as Boy Scouts, Girl Guides, and the Junior Red Cross, and open-air schools for young children, would give a much better chance to the coming generation.

Dr. J. A. Mitchell, Secretary for Public Health for South Africa, said that there was an extraordinary tendency to exaggerate the prevalence of disease amongst natives. In South Africa not more than 2 per cent. of all races had venereal disease, and since inter-tribal wars had been stopped and famines were prevented or checked, the real racial danger was the destruction not of the natives, but of the white population, which might be elbowed out, swamped, or absorbed. In a paper laid before the conference by Lieut.-Colonel Pargett Adams, the incidence and manifestations of venereal disease amongst natives were described. Syphilis was a far less formidable complaint in South African Abantu races than in white or partly coloured people.

In a paper by Dr. Gordon Bates (Canada) it was insisted that the Venereal Disease Acts were of real value from the point of view of the protection of the family. Canada was going forward on the lines of a broad social programme. Mr. John Huxham (Queensland) advocated the interchange of medical certificates between persons wishing to contract marriage. Dr. Draper Bishop (Guernsey) said that as a result of legislation social abuses had been enormously reduced. Dr. David Lees criticised Sir Kingsley Wood as regards economy. If it had been possible to save money let them use the money saved for the attack on gonorrhœa. As regards the problem of large or small centres, he protested against the tendency to establish ad hoc clinics instead of clinics inside the hospitals. A point that was essential was to get a keen medical staff, but it was questionable how long this would be possible under the present rates of payment; he could not advise able young men to go into the work of venereal disease under present rates of pay, and suggested that the Ministry of Health should make part-time appointments, so that the general public, which was not getting as good treatment as hospital patients, could benefit from their experience. Dr. J. H. Sequeira said that the London Hospital had no difficulty in getting expectant mothers into the clinics, because there was no attempt to label the departments as ad hoc departments. Mr. H. Wansey Bayly claimed that self-disinfection, which was in practice in Portsmouth, had resulted in bringing the Portsmouth figures for disinfection considerably below those of Birmingham, a decrease having been seen in Portsmouth, whereas there had been an increase in Birmingham.

Colonies, Protectorates, and Mandated Territories.

The problem of venereal disease in these countries was discussed at the final session of the Congress on Wednesday, Oct. 7th. Papers were submitted by delegates from Barbados, Nigeria, Ceylon, Fiji, Nyasaland, and Palestine.

Dr. A. M. De Silva said that in Ceylon the Government and the public are vigorously attempting to deal with the prevention and cure of venereal disease and that the number of sufferers shows signs of decreasing. In Colombo all houses of ill-fame have been closed; the police strictly enforce regulations against public solicitation; free treatment clinics are available at all the large hospitals, and specially trained doctors travel from village to village. There is no difficulty in getting the people to come for treatment.

Dr. P. T. Harper said that hitherto the inhabitants of Fiji have been immune to syphilis owing to the magical rite of inoculation with yaws practised on children after the eruption of their first teeth. A small percentage of Fijians grow up without having contracted yaws, and the proportion is increasing owing to the influence of the Government and missions. A number of them is also being cured of yaws, and it may be confidently expected that in future syphilis will appear amongst the Fijians and spread. as gonorrhœa is now slowly spreading amongst them. The abolition of indentured labour has lessened venereal disease amongst the Indians. Free treatment is provided at numerous Government institutions for all Fijians, Indians, and necessitous persons, and there are arrangements for treating all infected seamen arriving at the islands.

Nyasaland, Palestine, and Jamaica.

Dr. Meredith Sanderson, describing the conditions in Nyasaland, said that leprosy, plague, trypanosomiasis, bilharziasis, ankylostomiasis, and venereal disease are all endemic. The last can only be dealt with as part of an organised effort to improve the public health as a whole. The problem is political rather than medical; the Pax Britannica is apt to result in boredom, and the adage about Satan and idle hands is very true in Central Africa. Tribes which were moral under tribal rule have become less moral; the marriage tie has been weakened and prostitution is on the increase. Dr. Sanderson considers that tribal discipline may be improved; that the marriage tie should be regularised by civil process; that village schools should give instruction in hygiene; and that a native medical service should gradually be built up.

Dr. J. W. P. Harkness said that syphilis amongst the rural population in Palestine is mild in type and is spread by social rather than sexual intercourse; but its effect on birth-rate and child life is as serious as in Europe. The people are not sexually promiscuous and they marry early; but domestic hygiene is bad. The health department is capable of treating about 2000 patients a year, and instruction in hygiene is given to teachers in Government schools. Education is a very laborious process, and suitable pictorial representations of disease are extremely hard to devise. In 1924 the Supreme Moslem Council consulted the health department as to the practicability of a religious edict forbidding the marriage of Moslems who do not submit medical certificates of freedom from venereal disease, and there is a possibility of this being tried in one district. Gonorrhœa is not unduly prevalent in Palestine, though there are epidemics of gonorrhœal ophthalmia. The administration has never countenanced the system of registration and compulsory examination of prostitutes, and the number of brothels in Jerusalem and at the ports is less than in 1918. Syphilis and gonorrhœa are notifiable but not by any means always notified. The general situation is promising.

The Bishop of Jamaica said that the population of Jamaica was about 9 millions, of whom some 15,000 were Europeans. The percentage of persons suffering from venereal disease has been estimated at its lowest as 40 and at its highest as 80. Until recent years the Government paid very little attention to the problem. In the past six years a committee, of which the Bishop is chairman, has been at work, and it has made representations to the Government, broadcast literature, and instituted courses of lectures. All this has made a considerable stir amongst the people. The Bishop said that adequate sums of money are required to deal with the situation effectively. If there is to be success in the great campaign throughout the Empire it must be by legislators, medical men, and ministers of religion working together.

Mrs. C. Neville Rolfe (secretary-general to the Congress) said that the outstanding need is for assistance to the medical services in the Colonies.

In winding up the conference Colonel Harrison pointed out that expenditure on venereal disease is a paying proposition.

WORKSHOPS FOR THE TUBERCULOUS.

HEALTH WEEK CONFERENCE.

A CONFERENCE in connexion with Health Week was held at Holborn Town Hall on Oct. 7th with the object of making known and popularising workshops for tuberculous patients in the borough. In opening the proceedings the Mayor (Councillor H. W. Coleman) said that Holborn was able to demonstrate the possibility of such workshops by the success of the Spero factory in Hatton Garden.

Dr. C. H. Walmisley, chairman of the Public Health Committee of the London County Council, described the difficulties which faced the local authority which tackled the tuberculosis problem. It was very important that notification should be received early. Sanatorium treatment was often difficult because the financial position of the patient made him anxious, and his benefit under the National Health Insurance was for a limited time. At the sanatoria the patient must attain to six or eight hours' work a day; to do only four or six hours was unsatisfactory because he might then go home and try to do eight, which would lead to relapse. This was where the system of workshops came in. The tuberculous patient who did only six hours' work a day was either paid for half a day's work, in which case his family could not live, or else he was paid for a full day's work, when the goods he produced could not be sold at an economic price. He suggested that surplus funds under the National Insurance Act should be devoted to subsidising workshops. One of the worst possible ways of treating tuberculosis was to take a man away from a sanatorium and let him sink in his way of life. Even able-bodied men had great difficulty in finding work to-day. A workshop, he said, was quite different from a colony, where a family was taken from its surroundings and put down in a new environment. The workshop allowed the man to live at home and go to work under conditions suitable to his disease.

Funds and Subsidies.

Dr. Otto May, of the Prudential Assurance Company, said that early deaths from tuberculosis accounted for a heavy item in claims against insurance funds, and that the company were interested in any way of preventing them. The suggestion that they should bear the whole cost of subsidising workshops had the merit of simplicity, but although they might be induced to help in suitable schemes they had, in fact, very little surplus money. The approved societies, however, had large surplus funds under the Insurance Act, and there was no reason why they should not allocate some of them to the provision of tuberculosis workshops.

Dr. Haden Guest, speaking as a Member of Parliament rather than a doctor, said that he believed that the remedy of the great social problems did not lie with medical science but in an alteration of social conditions. We were preserving in our cities—in London—manufactories of tuberculosis. Prevention was not a question of serums but of hygienic surroundings. The real difficulty in getting early notification was that the workman did not want to go on the sick list and lose his wages. It could never be obtained until there was some means provided of supporting such a man, and this was one of the key-ways of dealing with the situation. At present many cases escaped notification altogether. He would like to see workshops provided in the early stages, so that the men could get better before they got bad, and he agreed that workshops were useful for men who were recovering. Subsidy for this work would be an altogether useful and commendable expenditure which would really bring in dividends. He thought that trade unions might be asked to coöperate as health propagandists, and that they could do useful work. He had himself been a member of the L.C.C. Public Health Committee, and considered that although it was doing valuable work it should do three times as much. The present tuberculosis figures ought to be halved before there was any cause for satisfaction.

Dr. Harry Campbell said that many patients who had active tuberculosis were capable of light work. In workshops they would have medical care, congenial work, and new interests, and could be taught to avoid infecting others.

The Hatton Garden Workshop.

Dr. N. D. Bardswell said that the Spero leather factory was the first work centre of its kind to be established in London, and, so far as he knew, the first in the country. It had been opened in 1922 by the Central Fund for the Industrial Welfare of Tuberculous Persons, and the employment scheme consisted of three units—namely, the central office and showrooms at Denison House, Vauxhall Bridge-road; the specially arranged hygienic factory at Cross-street, Hatton Garden; and the training centre at King George V. Sanatorium, Godalming, whence employees for the factory were recruited. Dr. Bardswell described the conditions at Hatton Garden. The factory makes high-class fancy leather goods, such as purses, bags, and wallets, and sells them in the open market. The full complement of the factory is 23 men. At present there are 22 employees, of whom 11 are ex-Service men; five are married. The minimum rate of wages to trained men is 8½*d.* per hour, or 30*s.* a week, which is the same rate as prevails in the Lord Roberts' workshops. On increased efficiency the rate is raised, and the wages of the trained men at present vary from 44*s.* to 30*s.* 3*d.* The men prefer payment per hour to piecework. Working hours are from 8 A.M. to 5.30 P.M., with one hour's interval for dinner and ten minutes for lunch; on Saturdays the factory closes at mid-day. Two weeks' holiday on full pay is allowed during the year. The workshop and business generally are managed by a committee of five members, one of whom is an employee of the factory nominated by his fellows, and a highly skilled leather worker is responsible for the routine work in the factory. The medical supervision of the employees is exercised by their usual medical attendants, in association with the tuberculosis officers of the various boroughs, whilst their social welfare and that of their dependants is looked after by a small informal committee. Owing to the relatively low wages that can be earned, financial difficulties continually call for attention. On the social side of its work, the Central Fund have found invaluable helpers in the British Red Cross, the Charity Organisation Society, the various borough care committees, and other social service organisations.

Results of the Experiment.

After three years' experience, continued Dr. Bardswell, the following conclusions had been reached. (1) The organisation of employment for tuberculous persons is a practical proposition; but the training of tuberculous persons for a skilled trade is not generally possible. Were the Central Fund to begin over again, they would not choose a skilled trade, such as leather work, but rather some trade demanding the minimum of training in which the output of workers could be assisted by the use of simple machinery. This lesson of the Fund's experience could not be too strongly emphasised. (2) Medically speaking, tuberculous persons working in a city factory under conditions such as can be seen in Hatton Garden do very well. The workers, all definite cases of pulmonary tuberculosis, and many of them serious cases, had maintained their health or improved, and as a means of after-care the success of the factory was fully proved. (3) On the important question of cost it was less easy to be dogmatic. The business was young, though growing, and had a long way to go before it could be considered established. To start a new business at a time of general commercial depression was very difficult; markets were shy and competition relentless. Added to this there was the handicap of employees whose output was lower and slower than that of their competitors. Before anything else, a factory for tuberculous persons needed a certain and constant sale for its products, and this should be the first consideration of the promoters of any scheme of employment. The rent of the premises at Hatton Garden was £150 a year; gas, heating, and cleaning cost £90. The cost of altering and equipping the factory had been £400, and the salary of the workshop manager was £350 per annum. Broadly speaking, the income from sales of goods at present covered the whole amount paid in wages to the employees and the cost of raw materials used in the factory. All other expenses, such as rent, taxes, insurance, wage of manager, office expenses, and assistance to the employees, had to be met from other sources, and these amounted to more than £1000 per annum. As everyone knew, a factory for the partially disabled must be subsidised; but it was surely a wise expenditure which maintained in health and work those who otherwise would be sick and without the means of work.

Agreement and Criticism.

Dr. G. Quin Lennane, medical officer of health for Battersea, welcomed the Holborn work as a pioneering experiment. Dr. H. de C. Woodcock said that the fact that this scheme had proved practically an economic success under present difficult conditions seemed an argument for making workshops for the tuberculous a national question.

Mr. F. Berliner (Finsbury) said that many skilled men were out of work, and in his opinion, by the subsidy of workshops, the wrong men were being put to the work. Those who could not compete commercially in one sphere should have the opportunity to work in another, and the influx of healthy men to the towns should be met by letting the tuberculous, for instance, go out into the country. There were 21 million acres available for afforestation, and there was light work, such as the care of nurseries and putting up netting and fences, which he thought suitable for the tuberculous. At Hatton Garden it had been found that the only way to carry on was to observe ordinary business hours, and even then the lack of speed of the workers was a serious handicap.

Councillor the Rev. H. Ross said that the mental and moral welfare of the men was important, and that they did not want to move from their homes and surroundings. He agreed that as many as possible should go on the land, but more workshops were needed.

Glasgow Post-Graduate Medical Association. The Association has arranged a course of instruction from November till May on similar lines to those of former years: (1) A series of demonstrations will be held each Wednesday afternoon commencing Nov. 4th. The programme includes medicine, surgery, obstetrics, and a number of special subjects. (2) Special courses in ophthalmology have been arranged by the staff of the Glasgow Eye Infirmary. Instruction in other special subjects will be arranged by other hospitals to meet the expressed desire of graduates. (3) A number of clinical assistantships are available in the wards or out-patient departments of various hospitals for periods of three months' tenure. The syllabus may be obtained from the Secretary of the Association, Dr. James Carslaw, 6, Woodside-crescent, Glasgow, C.3.

THE LANCET.

LONDON: SATURDAY, OCTOBER 17, 1925.

PHYSIOLOGY AND ORTHOPÆDICS.

This is the season for introductory and presidential addresses, and there is some risk that in the flood of October oratory the paper read by Mr. Blundell Bankart before the Orthopædic Section of the Royal Society of Medicine on Oct. 6th may attract less notice than is demanded by its merits and the importance of its subject. Every surgeon ought to be familiar with the latest established facts concerning the physiology of muscular action, and in no specialty is such knowledge required more urgently than in that of orthopædic surgery. As Mr. Bankart very truly pointed out, "its ultimate aim is the restoration of function, so that those who profess to deal with disorders of bodily function must have some knowledge of the normal functions of the body." Advances in pure science are apt to remain unapplied in practice for a long time, and especially is this true of the science of physiology, which advances not often by leaps and bounds, but for the most part by many small creeping movements. It is very well then that there should be vigilant observers who bring the latest discoveries of the laboratory to the notice of the clinician. Even if, as in the case of recent experiments into the sympathetic innervation of voluntary muscles, improvement in practice does not necessarily follow, yet the discussions which arise around it ventilate the subject and tend to maintain and improve the liaison between the experimenter and the practitioner. It is some years since Prof. Sherrington published an account of his work on the postural activity of muscle, and showed that although there is only one kind of striated muscle cell, there are two kinds of muscular action, one of which brings about movement, while the other resists or prevents it. This fact is of interest to all clinicians, but it is of special importance to orthopædic surgeons, not only in the treatment of spastic palsy, but in the treatment of errors of posture, which they may hope to correct not by the education of muscles, for they are the mere slaves of nerve-fibres and incapable of learning or being taught, but by educating the nervous mechanism. Whether the faulty posture affect a segment of a limb or the whole trunk and lower limbs, if it is due, as is so often the case, to a lack of tonic muscular action, its correction can only be hoped for as the result of improving the efficiency of the neuro-muscular mechanism which produces postural tone. It therefore follows that resistance exercises should be preferred, which call for the tonic contractions which resist movement and are more likely to produce good results than free voluntary movements.

Probably one reason why the drill sergeant has been so much more successful than the civilian physiotherapist in producing changes of trunk posture, is that he relies more on making the recruit resist tendencies to sag and slouch than on active movements which are supposed, probably erroneously, to improve posture. But as postural tone is concerned in the regulation of all voluntary muscular movements, the performance of these latter must have some, if only a small, effect on the development of the former. All who are concerned with physiology—among whom at least all orthopædic surgeons should be included—were interested in the posthumous publication[1] of two lectures by that brilliant Australian physiologist Dr. J. I. Hunter on the Sympathetic Innervation of Striated Muscle, in which he claimed to have shown as the result of experiment that the postural tone of Sherrington was really composed of two kinds of action which he called plastic tone and contractile tone respectively, and further, that every striated muscle consisted of two kinds of fibres, of which one was innervated by sympathetic nerve-fibres and the other by the ordinary medullated nerves of the cerebrospinal system. Dr. N. B. Royle went further and applied[2] the lessons learned from Hunter's experiments to the surgical treatment of spastic paralysis by sympathetic ramisection. This was less than a year ago when the new discovery was hailed with enthusiasm as a great advance in our knowledge of neuro-muscular physiology, and the operation based upon it was credited with great results. Unfortunately, Dr. Hunter was cut off in his youth and before he had an opportunity of profiting by the criticisms to which his new observations and theories were speedily subjected. Had he lived he would doubtless have profited by them and have been the author of discoveries which would have stood the test of time and conduced to his lasting fame. There used to be a cynical saying to the effect that the average life of a new physiological fact was three years. To judge from the review of the whole subject by F. M. R. Walshe, which appeared in the September number of *Medical Science*, the life of Hunter's new facts is to be measured in months not in years. Dr. Walshe concludes by saying that the analysis of postural tone into two separate components has proved to be artificial, that, in short, postural tone cannot be so split up and that sympathetic motor innervation of striated muscle has not yet been satisfactorily established. As regards the operation of sympathetic ramisection its results have been most disappointing, even in the two cases chosen by Royle out of 25, and operated upon by him in Boston.

To these experiences of the results of sympathetic ramisection which are referred to by Dr. Walshe there may be added those of Mr. Bankart, who stated that he had performed this operation for spastic palsy ten times without any beneficial result. As he is known as a most skilful operator and as one who has paid special attention to the operative treatment of Little's disease, it is not likely that much more will be heard of this method of treatment. Mr. Bankart also referred to the interesting but rather baffling question of muscular atrophy after injuries to bones and joints, which is especially noticeable in the quadriceps after fractures of the patella or of the lower end of the femur, and pointed out that it was the postural tone of the muscle that was most conspicuously lacking, and that while the power of voluntary contraction could be increased by active movement, massage and electric methods, we could only hope to improve the postural tone by proceedings which tend to stretch the muscle; in other words, by resistance exercises. Flexor muscles are not postural, and therefore those who hope that the transplanted hamstrings will be capable of controlling the knee-joint are doomed to disappointment, for the chief function of the quadriceps is not to extend the knee but to prevent it from bending, in which function the postural tone is alone concerned. Several other questions concerned with muscular activity which interest the orthopædic surgeon were lightly touched upon in this address, such as "What is cramp?" and the relations between intestinal stasis due to faulty posture, and arthritis. Mr. BANKART claimed, and we think made good his claim, that of all branches of surgery orthopædic surgery is the most advanced, for it has recognised, as all surgeons should, the importance of reckoning with the progress of physiological knowledge and applying its lessons on treatment. The physiology of muscular movement is but one instance of the fundamental relationship between physiology and orthopædic surgery.

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[1] Brit. Med. Jour., 1925, i., 197, 251.

[2] Brain, 1924, xlvii., 275.

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ANOMALOUS APPETITES.

PERVERTED appetites are well known if they are not very common. People and animals eat earth, hair, dung, cinders, curious pickles, and all sorts of things because they want to, and indeed in some cases because they feel they must. Normal appetite is a pretty good indication of normal need as we are now coming to learn, and it will be of much interest to discover the rationale of some of the fantastic cravings which are known. The last number of *Physiological Reviews* (1925, v., 336) contains a good account by Dr. H. H. GREEN of one case of which the explanation is apparently ascertained. Osteophagia in cattle in South Africa was mentioned by the traveller LE VAILLANT as far back as 1785. He noticed that the cattle eagerly searched for the bones left by his dogs and chewed them with relish, and he attributed the habit to the poorness of the grass on which the animals had been fed.

In recent times the habit has been so widely spread that in its milder phases it has come to be looked upon as almost natural. The least degree of craving is shown by a taste for sweet bleached bones alone; greater degrees by a readiness to gnaw at bones in increasing stages of foulness and putrefaction until the stage is reached at which the animal will devour any miscellaneous rubbish that it can get at. With this dirty food it is liable to pick up a toxigenic anaerobic bacillus (*Parabotulinus bovis*) which gives rise to the serious and fatal poisoning known as lamsiekte, and it is mainly the losses due to this which have concentrated attention on the osteophagia which always precedes it and which by itself causes noticeable deterioration of growth, milk-yield, and general condition. THEILER and his co-workers have shown fairly conclusively that osteophagia is caused by a deficiency of phosphorus in the diet. The administration of any phosphorus compound which can be utilised by the animals will cure it within a few weeks —bran, bone-meal, calcium phosphate, sodium phosphate, and phosphoric acid are all effective. It does not, of course, follow, because ague can be cured by bark, that malaria is caused by the absence of quinine, but in the present instance the indication from therapeutics is corroborated by many details of the relation of osteophagia to locality and season. Oxen, too, require the smallest ration of bone-meal to keep the craving under, growing stock perhaps twice as much, and milking cows still more. It seems, then, that osteophagia is a highly intelligent response to phosphorus deficiency, though the animals have not quite enough chemical knowledge to jump at precipitated calcium phosphate towards which cravers show no inclination. The craving in its more exaggerated form will also lead cattle to eat any odd rubbish whether it is rich in phosphorus or not, and in so doing they will often get killed by botulism: *quem vult deus perdere prius dementat.*

These curious facts suggest reflection on two lines. In the first place, as to how far similar "perversions" of appetite may have similar explanations. Are hair-eating and feather-eating expressions of a need for something in keratin, possibly the cystine? N. ZUNTZ found that he could increase the wool of sheep by feeding them with partially hydrolysed keratin, and one of his colleagues who took the preparation had to shave twice a day instead of once. Is coprophagia an attempt to get something which has been made by bacterial action in the bowel?—it has often been noticed in rats fed on vitamin-deficient diets. In the second place, as to how far it is phosphorus that is effective in restricting the quantity of live matter on the world. It is not an abundant element and most of what is in sight is in plants and animals; in the sea, at any rate, there is only just enough to go round—in other words, it becomes a limiting factor. Some wheat lands in America are useless without the addition of phosphate, and as Dr. GREEN points out it seems likely that the "cripples" of stock in New Zealand, Australia, and Texas is also aphosphorosis. Man, at any rate, has found it worth while—and not a little profitable—to go far afield to fetch phosphorus. The deposits in Christmas Island are commemorated in the Irvine Chair of Bacteriology in the University of Edinburgh.

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THE VOLUNTARY HOSPITALS OF GREAT BRITAIN.

THERE are in Great Britain 911 voluntary hospitals, with 58,551 available beds, and of these 793 hospitals with 45,091 beds lie outside the metropolitan area, and are the subject of a report[1] to the Joint Red Cross by Dr. F. N. K. Menzies, which is issued this week. There has never been any year, writes Dr. Menzies, in which all the voluntary hospitals paid their way, but, taking the extra-London hospitals as a group, there was a balance to the good for the year 1924 of £453,000 in England and Wales and £696,000 in Scotland, while 61 per cent. of all the hospitals did, in fact, show a surplus of ordinary income over ordinary expenditure. Nor has this favourable balance-sheet been obtained at the cost of diminished activity, for there has been a steady increase in the number both of in-patients and out-patients treated, the total number of new in-patients during the year reaching the figure of 614,069, and that of new out-patients the enormous total of 2,496,485. In their report to the Minister of Health last year the Voluntary Hospitals Commission put the total additional beds required for England and Wales at 10,000, making at a bare cost of £400 per bed a minimum capital expenditure of £4,000,000. Dr. Menzies regards these two figures as an under-estimate of actual requirements and sets himself to answer the question: Can the voluntary hospitals themselves within the next five years provide and maintain without State aid the additional 10,000 beds said to be required? He finds that during the last four years an addition of 4681 beds has actually been made to the voluntary hospitals of England and Wales alone, or an average increase of over 1100 beds per annum, so that the need would be supplied if only the hospitals found themselves able to double the normal rate of increase of their bed accommodation during the next five years. Obviously, as Sir Arthur Stanley points out in his foreword, there are great inequalities in the need, and such a newly populated district as Becontree, where hospital beds cannot be obtained by extension of an already existing institution—for there is nothing to extend—must receive financial help from the State. It will be remembered that the Hospitals Commission definitely asked for a capital grant of £2,000,000 for building purposes, but Dr. Menzies carefully considers the alternative ways in which the necessary funds might be made forthcoming. Closer coöperation between hospitals, so desirable in theory, has proved unattainable in practice, and founders on one of our invincible national traits. Exemption from local rate charges, also unlikely of attainment, can hardly be cogently urged when hospitals, like other ratepayers, benefit so greatly from certain municipal services. On the other hand, exemption from legacy duty would benefit the hospitals to the extent of £150,000 per annum, and make such a difference in the hospital budget that no further suggestion of "going on" the rates or the Exchequer, as Sir Arthur Stanley puts it, would need to be entertained. Dr. Menzies, however, believes himself that the Treasury, given the choice, would prefer a lump sum contribution to such a permanent loss of revenue. The final alternative suggested in the report, which does not exclude any other method of improving finance, would be the establishment of a Central Fund on somewhat similar lines to those of King Edward's Fund for London. The proposal, rejected at Sheffield two years ago, has yet much to commend it, although it may be years before such a fund could grow to any considerable dimensions, and time is of the essence of the problem. In one way or another the need for additional hospital accommodation, which in certain areas is very acute, must be met, and careful study of Dr. Menzies's report will be of material help to those who are concerned to raise the money. The report this year also contains a series of valuable essays on various aspects of hospital administration, one of which we print on another page. In this essay Mr. N. Bishop Harman sets out the claim for the general hospital as the ideal unit of organisation. There is, he argues, no justification for separate hospitals for disease of the nose, throat, skin, heart, rectum, urinary organs, for cancer cases, or for radiological treatment. Special hospitals run the risk of one-sided growth through loss of contact with general medicine and surgery or from failure to know what other branches of medicine are doing. The issue is one which needs to be clearly thought out in contemplating the addition of hospital beds in the near future.

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[1] Voluntary Hospitals in Great Britain, excluding London. Sixth Annual Report, for the Year 1924. By F. N. K. Menzies, M.D., F.R.C.P.E., D.P.H., Director of Hospital Services, Joint Council of the Order of St. John and the British Red Cross Society. With a Foreword by the Hon. Sir Arthur Stanley, Chairman of the Joint Council. 19, Berkeley-st., London. 1s. 6d.

CHIROPRACTIC.

THE first essential in the practice of medicine is the honest attempt to make an accurate diagnosis. Licensing bodies throughout the world prescribe a prolonged course of study, after a stiff entrance examination, with a view to producing a certain standard of diagnostic ability amongst those who are to have the care of the sick. In his presidential address last Monday to the Medical Society of London (summarised on page 807), Sir Holburt Waring ruthlessly laid bare the exiguous curriculum of many of the osteopathic and chiropractic schools in America. It would appear that many of these schools make no condition of entrance save the ability to read and write; they prescribe a mere 18 months of study prior to granting a doctorate of osteopathy or of chiropractic. The type of manipulator thus produced preaches the utterly unscientific doctrine of displacement of vertebræ with direct pressure on nerves and vessels as a result. There is a more enlightened school which describes the osteopathic lesion as an immobilisation of the joint outside its position of normal movement, and which attributes the resulting ills to irritation of the sympathetic. The growth of these two schools, whilst undeniable, need give rise to no serious anxiety unless there is failure on the part of the medical curriculum itself to recognise the value of manipulation in the treatment of pain, local or referred. We know of only one general hospital at which a class of students is taught the technique of joint manipulation, and attendance at this class is not compulsory. In cases in which manipulation offers a chance of relief this can now be obtained only at the hands of a small group of qualified practitioners, and relief, therefore, tends to be sought in unqualified channels.

Annotations.

"Ne quid nimis."

RESEARCH IN THE MEDICAL SERVICES.

OUR issue this week opens with an address, entitled as above, and delivered before the appropriate Section of the Royal Society of Medicine by Sir William Leishman on Monday last. The Director-General, A.M.S., points with confidence to the opportunities enjoyed by the officers in his and in the sister Services, for contributing to the medical wisdom of the world both by coöperation and by individual labour. His words in the latter respect, with regard to the planning of work, are wholly admirable; especially does he inculcate that self-criticism which will go far to prevent premature enunciation of theories, a proceeding which is unfortunately followed by personal disappointment or resentment for the would-be discoverer, while it is woefully embarrassing for all workers along the same lines. Sir William Leishman's counsel is designed to create a fine individual worker who shall contribute to collective research. Alterations in the conditions of service in the R.A.M.C., which took effect under Sir John Goodwin some five or six years ago, with the active coöperation of Sir William Horrocks and the present Director-General, have made it possible for sound scientific workers to attain to positions in the Service of proper trust and emolument, so that the great scope for original labour in tropical and preventive medicine offered by the sphere of duty can be properly taken advantage of. The reform is bearing fruit now, while the urge of scientific enterprise has manifested itself also in the Navy and the Air Force. In all the Services there must arise difficulties due to isolation, to change of station, and to the daily pressure of routine, but in all of them there is a spirit abroad surmounting the obstacles, and that it is the spirit rather than the provision of material appurtenances which counts is sufficiently shown by past records. The zoological-pathological work of Manson and Ross was accomplished largely while carrying on their arduous duties, and with a similar disability Sir Leonard Rogers found time to reverse the figures of cholera mortality. Sir David Bruce, with many patients but no laboratory save what he could construct for himself, found the germ of Malta fever and initiated a campaign which added a battalion to the effective strength of the Army; after which he, with the devoted assistance of his wife, went on to discover the relations of the tsetse-fly to sleeping sickness. Sir William Leishman himself, while engaged in the duties of his office, discovered the cause of kala-azar, and Sir Percy Bassett-Smith, as a naval officer, showed the Navy how to escape the menace of scurvy. Last week we published a paper read to the International Congress of Aerial Navigation at Brussels by Group Captain Martin Flack, in which the relation of stable nervous control to flying efficiency was fully discussed, and the elaborate work there indicated, which has to be undertaken for the assessment of a candidate for flying duties, demonstrates the high range of scientific accomplishment to which officers in the Air Force Medical Service must to-day attain if they are to discharge their duties. Medicine may look confidently to the Services for competent and zealous recruits to medical research.

THE TEACHING OF HEALTH.

THE Royal Sanitary Institute was recently responsible for a National Health Week, when nearly 400 cities and towns of the United Kingdom joined in the campaign for rousing a sense of personal responsibility for health. Such a health week has usually as one of its attractions popular lectures on health matters, and there seems to be an increasing demand for public health propaganda by the spoken word. In view of this it seems important that the principles underlying the health talk should be fully understood, for there is a certain amount of danger attached to faulty method. It is interesting to note that education in general relies largely on the spoken word, and that despite the high level attained by modern advertising business still has to depend to a large extent upon the glib salesman. while health propaganda is still mostly a matter of poster, pamphlet, or picture, to the neglect of the most valuable medium afforded by speech. The National Tuberculosis Association of America has realised some of the difficulties attendant on the use of the spoken word, and in a recent little book [1] Dr. Iago Galdston has analysed these difficulties and set down certain rules for the guidance of the health teacher. The speaker in the first place should be carefully chosen and diligently trained, and it must be borne in mind that one who can effectively lecture to a group of city merchants may fail lamentably before a class of school-children. The choice of vocabulary must be strictly made with the elimination of all technical words, and a pleasantly carrying voice is as important as a forceful personality. The subject matter of health talks presents more difficulties than are at first apparent; the available information must be abstracted, defined, and arranged in such a manner that it can be adapted to the age, social, or sex group for which it is intended. It is to be remembered that in these days of the universal newspaper most audiences will have a smattering of recent information on health matters. A lecturer on cancer, for example, will be expected to give an account in simple language of any recent discoveries in this field and he will lose some of the effect of his appeal if this be omitted. Health teaching is not the same as health preaching, and the untrained lay speaker who recites a set of rules will, in general, prove ineffective, for members of the average audience demand to be told the reasons why they should change their ways and do this and avoid that. The audience to which a health talk is being given must always be carefully considered, and the set lecture delivered alike to factory-hands, school-teachers, and working-class mothers is likely to be of less value than if it were skilfully adapted to suit the situation. The set lecture written out in full is also to be condemned; with the main points before him the successful lecturer will develop his theme according to immediate circumstances. The long talk and the series of talks will differ considerably from the short talk, and here again skilful adaptation will be necessary for success. The question of the adjuncts of a lecture have also to be considered; in general the distribution of pamphlets should take place after the health talk, and other illustrative material such as charts, slides, and films must be chosen to harmonise with the subject, both in substance and in treatment. When slides are used the lecturer should be careful to speak *with* the pictures rather than *about* them, for this avoids the obvious handicap of a rapidly shifting attention on the part of the audience. When films are used brief introductory remarks and then the picture, followed by some 10 or 15 minutes' talk emphasising certain points, will be found the best plan. Object talks, including blackboard drawings, have certain uses, but here, even more than elsewhere, the lecturer will need special training. Dr. Galdston's little book includes an account of how a broadcasted health talk should be arranged. The necessity of a striking introduction is obvious, and a talk in clear-cut, short, simple sentences will enable anyone tuning in during the middle of the talk to understand what it is about. Broadcasting opens up a new avenue for the effective promotion of public health, but certain points in the technique require close attention. Some of the suggestions made here may seem trite and unnecessary, but with the new powers under the Public Health Act enabling local authorities to spend money on health propaganda there is some danger that the teaching of health may be looked upon as a simple off-duty occupation for junior officials in the health departments. The effective use of the spoken word in health propaganda has undoubted value, but care must be taken to master some of the esssential details of what is certainly a highly specialised art.

PERSPECTIVE IN X RAY INTERPRETATION.

Dr. William Cotton has endeavoured to apply the laws of perspective to the art of radiography, and he gave a demonstration on the subject at the recent International Congress of Radiology, the substance of which he has now reprinted. By these laws we are enabled to represent accurately on a plane the appearance of triply extended objects as seen from a point known as the centre of vision. The author considers that in radiography the focal spot of the X ray tube is the centre of vision, and in order to obtain a correct interpretation of a radiogram the observer must stand in the same position relative to the film as the focal spot when the exposure was made. If this position is adopted, then by the same laws of perspective the view of a subject seen on the fluorescent screen is a false or reverse one. This picture, however, is the only one possible in existing radiographic methods. In view of the valuable information which the fluorescent screen reveals, it would appear desirable to adopt methods for examining radiographs which give the same picture of a subject as seen on a screen. By the same picture is meant that the parts of the radiogram appear in the same positions relative to the observer as they would appear on a fluorescent screen. An attempt to obtain this view is complicated by the extensive use of both positive and negative radiograms, but the difficulty is removed by marking the side of the film placed next the subject during exposure. When the film is viewed through this side a negative picture is seen if the above convention is adopted. The positive, corresponding to the fluorescent view, is the mirror image of the former and is obtained by viewing the film through the unmarked side.

Owing to the local nature of many radiograms, the observer has not the advantage as in photography of knowing when the image is erect, and it is usual to make some mark on the film, the position of which relative to the subject is known. In the picture seen on a fluorescent screen those parts of the subject nearer the observer are more sharply defined than those more remote, and in this respect the screen picture corresponds to the photograph. On the other hand, the parts of the subject further from the screen are magnified, whereas in the photograph more remote parts appear diminished in size. This distortion observed on the screen and radiogram is obviously due to the use of a cone of illumination, part of which is transmitted through the subject to the film and is independent of the position of the observer. For this reason, therefore, it is not to be expected that a radiogram will furnish directly accurate data concerning the relative dimensions of the different parts it portrays. However, by placing the affected part as near as possible to the fluorescent screen a truer idea of its dimensions may be obtained. To ascertain the position of a foreign body, two radiograms are taken by the usual stereoscopic method. Following the above convention the picture obtained when the X ray tube is moved to the right may be termed the right-eye picture and that for the corresponding shift to the left, the left-eye picture. Correct relief can only be obtained from a stereoscopic pair when the right-eye views the right-eye radiogram and the left eye views simultaneously the left-eye picture. The methods by which the two pictures are superposed may be divided into two classes. In the first, of which Brewster's lenticular stereoscope is an example, each eye views its appropriate picture or its enlarged image. In the second, right and left eyes view mirrored images, which correspond respectively to right and left-eye pictures. The Wheatstone stereoscope is of this type and it is clear that to obtain correct relief, from the point of view of the fluorescent screen, the right-eye view must be placed on the observer's right hand and the left-eye view on his left. Both views must be so placed that the sides of the films, which were originally in contact with the subject, face the observer.

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[1] Health Speaker's Handbook. New York: National Tuberculosis Association, 370, Seventh-avenue. 1925.

The application of the principles of perspective to radiography, as suggested by Dr. Cotton, is useful in that it stresses the importance of adopting systematically the same position relative to all radiograms. It is in his choice of a position corresponding to the focal spot that we differ from Dr. Cotton. This position leads to a picture which is the reverse of that seen on the fluorescent screen, and thereby introduces a complication which is avoided in the method of examination outlined above.

THE RELIEF OF LEEDS UNIVERSITY.

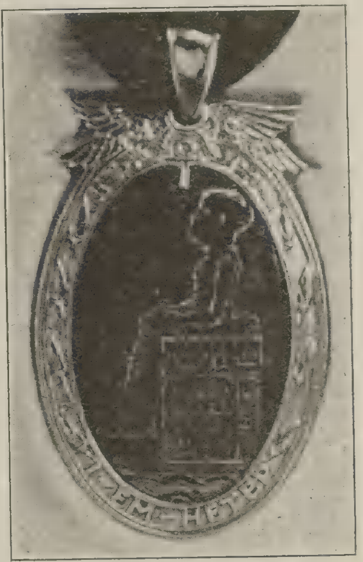
THOUGH certain authorities have doubted whether stone walls a prison make, and all have agreed that they do not make a university, it cannot be denied that stone walls are an important predisposing cause of both types of institution. Scattered wooden buildings make a poor prison and are inappropriate to a seat of learning. The rapid growth of Leeds University has made it necessary to carry on much of its work in temporary structures and transformed dwelling-houses; but in the course of time such conditions have become increasingly irksome, and the University is rightly pleading for relief. Present conditions are hardly tolerable, and expansion is impossible until new and larger buildings can be put up. The occasion of the appeal is timely; the coming of age of the University coincides with the jubilee of the Yorkshire College of Science, which was one of the three bodies whence it sprang. Of the many factors which brought this College into being the most important were the increasing public appreciation of the value of education, and especially of scientific and technical education, and the growth of the mechanics' institutes. The motives of the promoters were utilitarian; they wanted to increase industrial prosperity, but even at the inauguration there were those who took a wider view. On this occasion Dr. Lyon Playfair said:

> "The object of technical education, even in a technical school, is not to teach men how to use spinning jennies or steam hammers, but it is to give a cultured intelligence which may be applied to work in life, whatever that may be . . . The ultimate effect of this may be that you may evolve a wider and more comprehensive college for higher education."

It is said that when the College opened its doors in 1874 only one student, a coal miner, appeared on the first day, and that two more days elapsed before he was joined by a second; but the three original professors were Sir Arthur Rücker, Sir Edward Thorpe, and Prof. Alexander Green (all of whom became Fellows of the Royal Society), and the wisdom of choosing such men soon bore fruit in the success of their undertaking. It was not long before they came to the conclusion that their efforts could not attain a maximum of usefulness until the curriculum was expanded to include literary study, and in 1878 this change was made and the words "of Science" were deleted from the name of the Yorkshire College. About this time the Leeds School of Medicine, which had been in existence for nearly 50 years and had achieved something of a reputation, began to wish for university status, and it joined forces with the Yorkshire College in 1884 in the hope that the joint college would be admitted to the Victoria University. In 1887 the hope was realised, and Yorkshire College joined Owens College and University College, Liverpool, in a federation. In 1903 this federation was dissolved, and in 1904 a Royal Charter made Leeds a University. It is hardly necessary to describe the fortune of the venture. The academic staff has grown to include 268 persons; there are some 1700 men and women students, 320 of whom live in University hostels; and there are 42 departments of study grouped in the four Faculties of Arts, Science, Technology, and Medicine. Such an institution as this can do invaluable work for its county and its country, and yet, unlike other universities, it has hardly received the financial support which its services deserve; and although ends just meet on the present revenue of £173,000 per annum (33·4 per cent. of which is from Government grants and 17·2 per cent. from local education authorities), a special effort is needed if the University is to be freed from its present cramping and expensive circumstances. In our correspondence columns we publish an appeal for the medical school, a school which is associated with the names of men, living and dead, who have been leaders of our science. It will be regrettable if appeals do not meet with a worthy response.

I-EM-HETEP.

THE medallion which we reproduce was presented on Oct. 8th to the Reading Pathological Society by Sir Stewart Abram, an ex-president of the Society, to be the President's jewel or badge, and is of interest since, instead of the somewhat hackneyed figure of the Greek god Æsculapius, it represents the Egyptian Deity of Medicine, I-em-hetep or Imhotep, whose name signifies "he who cometh in peace." This famous Egyptian lived about 2900 B.C., and was a learned and many-sided man. He was Prime Minister to a Pharaoh of the Third Dynasty named Zoser. Further, he was a distinguished architect, and built the earliest pyramid known to history, the Step Pyramid of Sakkarah. Above all, however, he was noted as a physician, and he so impressed his fellow-countrymen with his skill in the healing art that he was eventually acknowledged throughout Egypt as the Deity of Medicine. In his honour temples were erected in various parts of the country, and to them flocked patients from far and wide. Many miraculous cures are reputed to have taken place at his shrines. The jewel presented by Sir Stewart Abram consists of a pendant in hand-chiselled gold and enamel, designed and made by Mr. Omar Ramsden, of London. The oval plaque of enamel shows the image of the god, which is based on an exquisite early bronze statuette in the Wellcome Historical Medical Museum. The god is shown in profile, seated on a golden "throne of knowledge," while his feet rest upon a footstool representing the solid earth, which is surrounded by a green band symbolising the cultivated strip of land watered by the Nile. The latter is in heraldic blue and white, flowing by in full tide, whilst the background shows the blue sky of the East. The delicately wrought frame is surmounted by a double-headed and winged serpent from which is suspended the Egyptian "ankh," the symbol of life. The border is made up of lotus buds springing from a lower space inscribed with the name "I-Em-Hetep." At the back is engraved the following sentence: "George Stewart Abram commanded me to be wrought for the Reading Pathological Society, in October of the year of our Lord MCMXXV." At the Congress of the History of Medicine, held at Geneva in July last, a paper on I-em-hetep, the Egyptian Deity of Medicine, was contributed by Dr. J. B. Hurry, of



Reading. To the Reading Pathological Society will fall the honour of having been the first in this country to recognise the claims of I-em-hetep to be regarded as the Deity of Medicine. "I-em-hetep is," to quote the late Sir William Osler, "the first figure of a physician to stand out clearly from the mists of antiquity."

ALCOHOLISM AS AN INTERNATIONAL PROBLEM.

International movements are always suspect; it is often suggested that they are a kind of sport which enables reformers to visit foreign countries and hold enjoyable meetings. That the internationalism of the campaign against alcoholism is of real significance was the thesis of a lecture by Dr. R. Hercod, of Lausanne, before the Society for the Study of Inebriety on Oct. 13th. Certain countries, he said, have newly taken up vine growing; others have reduced their consumption by legislation or propaganda; economic depression has reduced markets; and the result of these things is a crisis in the wine-producing countries which has forced the growers to seek new custom. A French Minister for Agriculture encouraged the people to drink more wine on the grounds that this "temperance beverage" was really the best weapon in a serious fight against alcoholism (although an average annual wine consumption of 30 gallons per head suggests that the French population was already doing its duty); but however much sympathy may be felt with such enthusiasm, it is less easy to condone the methods adopted by France and Spain in forcing the importation of their produce on foreign countries. Iceland has been obliged to except Spanish wines from her prohibition laws because Spain could starve Iceland by refusing to admit her exports of fish, and Norway has suffered in much the same way at the hands of France. German breweries have considerable stakes abroad, and they and their methods are implanted in the Far East; and Scotch whisky is not without its influence on distant peoples. According to Dr. Hercod, Africa is suffering from a veritable scourge of alcoholism, which is the outcome of Western civilisation and which is inadequately controlled by the Convention of Saint-Germain-en-Laye. In partly Moslem countries the influence of religion is being overcome, and everywhere the lands which are producing more alcohol than they can consume are pressing their produce on others, in ways both legitimate and illegitimate. The support of the press has greatly helped the international campaign against prohibitive legislation, which has therefore been as successful as might be expected; but it is not merely in reaction against the activities of the liquor traffic, Dr. Hercod considers, that the cause of temperance will be helped by international coöperation. More information is needed on the experiments, both individual and social, of other countries, and the United States has lost a great opportunity by failing to organise a systematic and continuous investigation of the facts of prohibition. A strong educative campaign must be based on truth, and as yet there are gaps in scientific knowledge which should be filled. There are, for instance, discrepancies between the results of Dr. H. M. Vernon and Prof. E. M. Widmark, to name two workers only, and such discrepancies should be cleared up. Though it may be possible, even now, to come to an international agreement on the manufacture and distribution of alcohol on a smaller scale, it will be impossible to contemplate its total suppression so long as the population in general is unwilling to admit such a measure. Study of the propaganda methods of other countries, and especially their work in schools, is most valuable, and the International Bureau Against Alcoholism, of which Dr. Hercod is director, will do much to help. All who are imbued with the scientific spirit will approve the dissemination of the truth, about alcohol or anything else, but it is evident from the increasing stress laid by temperance workers on the social side of their work that scientific facts do not always impress the public. Alcohol has not been damned by being called a narcotic—for a narcotic is just what most people most enjoy. It has been truly remarked that "Mankind has never needed a stimulant, but rather something to take the edge off things."

CRITERIA OF PATHOGENICITY.

The time-honoured criteria for the identification of a microbe as pathogenic are those familiarly known as Koch's postulates. The difficulty in applying these criteria lies in the fact that the majority of pathogenic organisms do not produce in experimental animals a disease exactly identical with that which they produce in man. This holds not only for organisms whose rôle in human disease is still open to doubt, such as Pfeiffer's bacillus, but also with the most firmly established species, whose pathogenicity has been proved both purposively and accidentally upon the human subject, such, for example, as the typhoid and cholera organisms. Consequently, in attempting to prove the relationship of a given organism to a supposed disease the experimental demonstration often breaks down over this point, and this is the crux of the difficulty which lies in the way of proving or disproving the truth of claims which are constantly put forward. In a recent paper[1] Dr. W. M. Crofton suggests that two criteria may be safely substituted for the third of Koch's postulates. The first is that if a vaccine from a given organism will reduce the morbidity and mortality of a certain disease, then the organism composing the vaccine is the one which causes the disease, and, in evidence thereof, he cites the case of typhoid vaccine and the incidence of typhoid fever. This contention may be admitted in the absence of direct evidence to the contrary, but it must be remembered that not only are all the factors in play in such a case extremely hard to control, but that non-specific effects in immunity reactions are not uncommon, and in clinical medicine other parallels may be found to the case of small-pox and vaccinia. Dr. Crofton's second contention is even less tenable. He asserts that if in a given disease a vaccine or bacterial preparation produces a reaction—e.g., the tuberculin reaction—which is not obtained with the normal individual, and its injection is followed by amelioration or cure of the disease, then such a vaccine is composed of the causal organisms. He instances his own results with influenza vaccine in encephalitis lethargica, and those of Dr. H. W. Crowe, who claims to have cured cases of rheumatoid arthritis by a *Staphylococcus albus* vaccine prepared from organisms recovered from the urine. Both of these instances are unconvincing, since the association of influenza and encephalitis is very generally agreed to be a negative one, and, further, the present treatment of rheumatoid arthritis by bacterial vaccines, for which considerable success is claimed, is avowedly non-specific, such organisms as *B. typhosus* being frequently used. Whether or no they embody final truth, Koch's postulates cannot be set aside without substituting a habit of extreme and rigid self-criticism in bacteriological research.

HOME SERVICE AMBULANCES.

A legacy of the war was the inception of the ambulance facilities we now enjoy in this country. Before 1914 in only a few of even the great cities had the municipal authorities established a motor ambulance service. The County of London was still content with the service of hand-propelled wheeled litters established by the police, and it was not until 1915 that the motor ambulance service was inaugurated to deal with accidents. During the war, as everyone knows, splendid work in the provision and maintenance of ambulance service was done through the coöperation of the Order of St. John of Jerusalem in England and the British Red Cross Society, and happily after the signing of the armistice these two organisations decided that the need for their united efforts in the care of the sick had not come to an end. One of the first steps they undertook was the organisation of a national ambulance service for England, Ireland, and Wales. It was to the needs of the rural areas especially that attention was devoted, as in London and the great towns official boards had already begun to provide for the transport of the sick. The Home Service Ambulance Committee, formed under the Joint Council of the two Societies, began, therefore, to set up ambulance stations in various parts of the country, and to-day these number 341, with 34 affiliated stations, making a total of 375. The total number of cases carried since the establishment of the service up to the end of June, 1925, was 312,501. The Committee has just issued a new edition[1] of the register of these ambulance stations, grouped in counties, and to medical men in all counties there has been sent a list showing the stations in their county. Further, all the road scouts of the Royal Automobile Club and the Automobile Association carry a list of stations within their patrol. Wherever possible ambulances are placed in charge of those who by training have acquired dexterity in the handling of the sick and injured, nor is the handling of the vehicle itself of minor importance, for unskilful driving may gravely prejudice the patient's chances of recovery. The Order of St. John and the British Red Cross Society have a great body of trained members who voluntarily and gladly give their services. Maintenance costs are met in different ways according to local circumstances. In the majority of cases a charge is made for the use of the ambulance, calculated to cover the actual running expenses, with a margin sufficient to allow for remissions in necessitous cases. By such efficient ambulance service the sick can obtain a standard of treatment which might be impossible in or in the neighbourhood of their own homes, and in addition the safe transport of convalescing patients from large hospitals to smaller or at all events less expensive institutions can do much to relieve the pressure on the nerve centres of our hospital system.

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[1] Journal of State Medicine, vol. xxxiii., No. 10.

PARATYPHOID TRACED TO ICE-CREAM.

IN his report for the month of August Dr. G. P. Kinloch describes an outbreak of paratyphoid fever. Investigation revealed the fact that 21 Aberdeen cases were associated with the outbreak, and, further, that two girls from Glasgow, who had been on holiday in Aberdeen from July 17th to the 30th, had sickened of paratyphoid fever in Glasgow on August 2nd and 5th, respectively. Previous to 1924 paratyphoid fever had been absent from Aberdeen for four years, but cases were notified during the present year on May 7th, June 20th, July 10th, and August 5th and 9th. These cases, as far as could be determined, were separate and distinct from the 23 cases of the outbreak. In endeavouring to trace the source of infection, the milk-supply could be excluded, as the 20 families concerned were supplied by 13 dairies. After full inquiry it was ascertained that the one common article of food consumed was ice-cream, obtained from a particular shop on July 20th. As the patients sickened on or about August 4th, the incubation period of the disease could be put at about 15 days. In the shop in question about six gallons of milk are daily converted to ice-cream, the milk being brought to the boil, cornflour, &c., added, and then the mixture again brought to the boil, and when cold introduced into the refrigerator. The time which elapsed between the infection of the ice-cream and the outbreak made it impossible to find out exactly how the ice-cream had been handled and disposed of on the day in question. Full bacteriological investigation of the workers in the shop was carried out. Both the shopkeeper and her mother had suffered from typhoid fever a long time ago, and their blood agglutinated to *Bacillus typhosus*, but not to *Bacillus paratyphosus*. The shopkeeper's son had agglutinins both to *Bacillus typhosus* and to *Bacillus paratyphosus*, but he had been inoculated against both varieties in the army in 1917. Samples of blood from the three employees contained no agglutinins, and the specimens of fæces and urine from all six persons engaged in the shop were negative. There was no evidence that the milk from which the ice-cream was made was infected. It was obtained from one of the largest milk retailers in the city. It is estimated that 360 customers might be supplied daily with ice-cream from this shop, but so far as is known only 23 cases of infection occurred. There were no deaths, but some attacks were severe. In view of the fact that during July there was an outbreak of food-poisoning in Aberdeen, affecting some 500 persons, traced to a bacillus of the Gaertner group, Dr. Kinloch proposes to publish a more detailed report of both outbreaks later.

THE PANEL CONFERENCE AND THE OPHTHALMIC SPECIALIST.

THE Annual Conference of Representatives of Local Medical and Panel Committees will meet in the Great Hall of the British Medical Association next Thursday, when there is a very full agenda paper. The most important, although not the most controversial, matter which will come before this Conference is the new arrangement made in regard to ophthalmic benefit for insured persons. As the culmination of a long series of negotiations between representatives of British ophthalmologists, the Ministry of Health, and the Association, there has now been drawn up a list of 600 practitioners throughout the country who are regarded as ophthalmic specialists and who are willing to treat insured persons at a uniform fee of a guinea to cover each complete case of refraction. These practitioners have obtained access to the list by virtue of holding certain ophthalmic appointments, of having made a special study of ophthalmology, or of being recognised by fellow practitioners as having special proficiency and experience. Their fees will be paid out of the surplus sums available for additional benefit revealed at the second Approved Society valuation. Most of the smaller societies eligible to join the scheme have come in, bringing with them a million and a half insured persons. The larger societies, although not hostile to the scheme, are ineligible to join until next year. The actual procedure is that any panel practitioner, finding the condition of a patient such as to require ophthalmic treatment, shall at his patient's request furnish him with a recommendation in writing that such treatment shall be obtained. The insured person then procures from his society the necessary authority to visit one of the ophthalmic surgeons on the approved list. The scheme represents not only the death-knell of an attempt on the part of lay bodies to institute a kind of optical benefit outside the medical benefit provisions of the Insurance Act, but is the first embodiment of a specialist service within the Insurance Acts. No doubt other specialist services will follow in due course now that official recognition has been given to the doctrine that insured persons are entitled to treatment by fully qualified persons.

THE SANATORIUM AND AFTER.

THE after-treatment of ex-sanatorium patients is one of the most urgent and elusive problems which medical and social science has to face. A scheme to provide industrial employment in hygienic workshops, started in London two years ago, has given results sufficiently encouraging to merit attention from all who are dealing with tuberculosis care and after-care. A public meeting held last week in Holborn Town Hall in support of the more general provision of such workshops is reported fully on another page. From the strictly medical standpoint it is admitted that the combination of sanatorium, settlement, training centre, and workshop offers the ideal conditions for after-care, but such settlements can only deal with a fraction of the tuberculous population. While any workshop scheme has its inherent difficulties, the success of the London experiment known as Spero Leather Workers has surprised those who have watched it most closely. The improved health and happiness of the workers, consequent on their feeling of rehabilitation in industry and of their ability to maintain themselves, and perhaps a family, has exceeded expectation. During the 30 months since the workshop was started, absences on account of health have not exceeded 4 or 5 per cent. of the total time, although all the workers are ex-sanatorium patients; and this absence is covered by a scheme of sickness benefit. It is rather on the economic side that the difficulties lie. The tuberculous worker obviously cannot earn a living wage during his period of training or for some time after, and the distribution of manufactured goods on a small scale presents difficulty. It would be fatal to the success of any scheme to allow the standard of living of the workers to become inadequate, and steps have to be taken to supplement their income where necessary. At present the Central Fund for the Industrial Welfare of Tuberculous Persons is undertaking this responsibility. The outstanding need appears to be for schemes of employment providing work which does not require a prolonged period of training, such as repetition in workshops fitted with the necessary machinery or other work of unskilled or slightly skilled order. We hope that the publicity given to Spero Leather Workers will result in experimental schemes being started on other lines. Unfortunately the municipal workshop idea worked out by the late Dr. F. Stanley Tinker (THE LANCET, Feb. 21st, 1920) never came to fruition. It remains true, as he then said, that the value of the labour of tuberculous subjects has not yet been worked out. If properly managed it should, he thought, cover the cost of wages and even in time produce a small profit. This has been the case in the London experiment.

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[1] Home Service Ambulances: Ambulance Stations and Officers in Charge. Obtainable from the Offices of the Joint Council, 19, Berkeley-street, London, W.1.

IMMUNISATION AGAINST SCARLET FEVER.

IN a communication recently made to the Minnesota State Medical Association Dr. W. Colby,[1] of the Miller Hospital Clinic, St. Paul, reported that he had carried out active immunisation with detoxicated toxin of 132 children, aged from 2 to 14 years, and 16 nurses, who all presented positive Dick reactions. Sodium ricinoleate was used as the detoxicating agent, which, as Dr. W. P. Larson, of Minneapolis, has shown, possesses the power of neutralising bacterial toxins without altering their immunising properties, as he proved by successfully immunising animals against diphtheria and tetanus by this agent. The technique of the procedure consisted in the addition of an equal volume of a 2 per cent. solution of sodium ricinoleate to the toxin, when the final dilution equalled 4000 skin-test doses per c.cm. Thus prepared the toxin was allowed to stand at least four hours before injection. One injection only was given, the dosage ranging from 500 to 4000 skin-test doses. No general reactions occurred, and there were only negligible local reactions, consisting in erythema and slight induration, which disappeared within 36 hours. Immunity was established in direct ratio to the amount of toxin given. In order to increase immunity still further the dosage was safely increased to 6000–8000 skin-test doses. For children under 10 years of age observations showed that 4000 skin-test doses were sufficient. In older children and adults a higher dosage was required, as was shown by the low percentage of immunity (37·5) in the case of nurses in whom only 2000 skin-test doses were used. In the subsequent discussion, Dr. Larson remarked that sodium ricinoleate was nothing more or less than a highly purified castor-oil soap. The advantages of neutralising the toxin with this substance instead of with antitoxin, as in the ordinary toxin-antitoxin mixture, was that antitoxin tended to sensitise the child to horse serum. Since it was possible to neutralise the toxin effectively with castor-oil soap and possibly to effect immunisation with one dose, the main objection to active immunisation against diphtheria and scarlet fever would be removed.

DIFFICULTIES AND DANGERS OF INSULIN.

THE unique value of insulin in the treatment of diabetes is known to every newspaper reader in the world, but its drawbacks are not fully recognised even by those who have to use it. Many first-class research workers have, however, been energetically testing it under all conditions since it was first given to the world by Dr. F. G. Banting, and the mass of their results has laid bare most of its dangers and made known the most efficient precautions against them. Those who attended the meeting of the Section of Therapeutics and Pharmacology of the Royal Society of Medicine that was held on Tuesday last had the privilege of hearing the latest results of some of the most eminent workers in this branch of therapeutics from the workers themselves. Dr. George Graham, who chose the subject for his Presidential Address, is well known as the author of many works on diabetes and allied conditions, and has a specialised experience of the disease that extends over many years.

Dr. Graham stated first of all that insulin, which is undoubtedly a very important discovery, does not cure diabetes, but so effectively counteracts as to enable the patient to take his normal place in social life. Very few who are treated with it remain invalids, and still fewer die entirely unaffected. He analysed 85 cases that had come under his own experience during the last two years at St. Bartholomew's Hospital, and showed that the 17 deaths were mostly in-patients who had never had insulin before they entered hospital, and in whom the diabetes had caused organic lesions that overcame the natural resistance even when the disease was counteracted. The large majority of patients treated with insulin were able to leave hospital after a few months and continue the treatment themselves. The difficulty here is to keep the blood-sugar normal after discharge. The normal in most people is below 0·1, but it is difficult to get it as low as this without causing discomfort from an overdose of the drug, while a high sugar content lowers the natural resistance to it. Hence, it was necessary by diet to reduce the sugar as much as possible without insulin. He exhibited several interesting charts and made some remarks on taking blood samples and on the regulation of treatment by post, a very interesting side-issue; he also gave an illuminating series of examples of the method of securing a good insulin "balance." Hypoglycæmia sometimes results if the dose is too high, but it is rarely very dangerous and the symptoms decline when sugar is administered. Curiously enough, the insulin requirement is often decreased after an attack. Another difficulty is that an intercurrent infectious complaint will send up the blood-sugar; if it is severe there is a danger of giving too much insulin. By taking urine samples every three hours and regulating the extra doses accordingly it is possible to keep step with the increased sugar content. Very large doses are often given with safety when the blood-sugar rises from this cause, sometimes up to 200 units. The danger comes when the patient begins to recover, and sugar should be kept ready against symptoms of hypoglycæmia.

Dr. R. D. Lawrence followed the President with some very interesting comments on the effect of exercise in lowering the sugar content. He quoted the case of a gardener who, on increasing his work at the beginning of summer and also taking up cricket, suffered from mild hypoglycæmia; 4 units decrease in the morning dose, which had been 10, restored this balance. When he resumed a more sedentary life his blood-sugar again rose. He is now learning to keep his balance according to his work output. Sunday tennis produced the same effect in another patient.

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[1] Minnesota Medicine, September, 1925.

Modern Technique in Treatment.

A Series of Special Articles, contributed by invitation, on the Treatment of Medical and Surgical Conditions.

CLXIII.

TREATMENT OF HYDROCELE, HÆMATOCELE, VARICOCELE, AND SPERMATOCELE.

Consideration of the treatment of these four conditions involves a brief discussion of their ætiology and differential diagnosis. It is clear that where the scrotal abnormality occurs as the result of the presence of some other focus of disease in the body, it is this primary lesion which calls urgently for treatment. Again, should erroneous diagnosis of these conditions be made, treatment directed to their cure is more likely to result in harm than benefit to the patient.

I. *Hydrocele.*

This is the only one of these four conditions not essentially male, as it is occasionally met with in the labium majus, especially in little girls, as *Hydrocele of the Canal of Nuck*, when its treatment is that of excision of the sac through an inguinal incision.

Various types of hydrocele are met with in the male.

Diffuse Hydrocele of the Cord is a rare multilocular cystic condition of the whole scrotal extent of the spermatic cord, often extending up through the inguinal canal into the abdomen; and the treatment consists in dissecting the mass away from the cord, by no means an easy task.

Hydrocele of an Unobliterated Processus Vaginalis (congenital hydrocele) is a condition met with in young children and usually only diagnosed when there is some coexistent inflammatory condition of the peritoneal cavity, such as tuberculous peritonitis, which causes fluid to be exuded and gravitate into the vaginal sac. Congenital hernia is usually also present unless the opening in the neck of the sac is too small to allow of the passage of bowel or omentum, but is a fruitful source of misdiagnosis, the best point in differentiating the two conditions being the slowness with which the hydrocele fills and empties and the absence of resonance in the fluid swelling. In a young child both will be translucent. Treatment consists in excision of the sac through an inguinal incision as for hernia; should tuberculous peritonitis coexist operation should be put off till this has been cured, as not only is there grave danger of a tuberculous sinus following operation, but a spontaneous cure may result.

Encysted Hydrocele of the Cord presents as an ovoid swelling in or just below the inguinal canal; if in the canal it may be mistaken for a bubonocele but has no expansile impulse on coughing, and can often be drawn down out of the canal by gentle firm tension on the testicle and cord, when the upper limit of the mass can be defined. Rarely chronic suppuration in the course of the cord, following gonorrhœa or tubercle, may cause a similar pyriform cystic tumour. Treatment consists in cutting down on the swelling through an inguinal incision and dissecting it off the cord, a difficult task since the membrane is thin and friable.

Hydrocele of the Tunica Vaginalis (hydrocele) may result from effusion into the tunica vaginalis secondary to some disease of the testis, or obstruction to its venous return, or may be the result of primary irritation of the lining membrane of the sac. It can be diagnosed by its translucency and tapering upper end.

Secondary Hydrocele may result from (1) acute or chronic inflammation of the testes or epididymis, as in gonorrhœa, tuberculosis, or syphilis; or (2) follow on a testicular tumour. In the acute cases there is pain, and examination of the testes and adnexa after "tapping" the hydrocele reveals that they are enlarged. The condition may also be present, as a bilateral affection, in cases of ascites due to advanced cardiac and renal disease, carcinoma of peritoneum, retroperitoneal tumours, and chylous ascites (when the hydrocele fluid is also milky), due to lymphatic obstruction in filarial elephantiasis and blockage of the thoracic duct. In all these cases treatment must aim at the eradication or alleviation of the primary disease, no local treatment other than tapping being indicated.

Primary or Idiopathic Hydrocele can only be safely diagnosed when the foregoing conditions, and the possibility of a hydrocele in the fundus of a hernial sac, or even an irreducible hernia, have been eliminated. Treatment of the condition is operative and should, except in very old or debilitated patients, aim at effecting a radical cure by removal of the secreting membrane, though tapping may often be necessary as a diagnostic step. The patient should be seated or, better, lying on a bed or couch for this operation.

Tapping.—The position of the testes having been ascertained (usually by touch and the patient's sensation, though transillumination may afford valuable indication of its position), the pyriform scrotal swelling is grasped in the palm of the hand, and the penis being held away by the thumb the skin is made to stretch tensely over the mass. The scrotum is now painted with 2 per cent. iodine in spirit, and an area on the front free from veins being selected, a sterile trocar and cannula are plunged sharply in, the trocar withdrawn, and the fluid allowed to escape through the cannula, the hand being used to press out the fluid toward the cannula. The trocar needs plunging sharply through the tense skin and tunica, both of which it can be felt to pierce, and then a sense of loss of resistance is encountered as it enters the fluid. The common source of inability to obtain fluid is that owing to the skin not being held tense and insufficient force used the trocar slips along the outer surface of the tense tunica between it and the skin, but occasionally it is plunged into the testes, as evidenced by the patient experiencing sickening pain, when it should be immediately withdrawn and reinserted smartly elsewhere.

When no more fluid escapes, the cannula is withdrawn and the opening sealed with gauze and collodion. Some surgeons prior to withdrawal insert a few minims of irritable fluid such as pigmentum iodi, or strong carbolic, which is massaged around, with the object of destroying the endothelial lining and so effecting a radical cure, but this proceeding causes some pain and the results are not on the whole satisfactory, as loculation very often occurs.

Radical Cure.—A short incision is made upwards and outwards from the pubic spine; the scrotal root is to be avoided, as not only is the skin difficult to approximate accurately, with consequent delay in healing, but fouling of the wound, with consequent sepsis, is very liable to occur during the use of the bedpan and urine bottle. The sac of the hydrocele having been exposed in the depth of the incision it is pressed well up into the wound from below and held there while it is incised alongside the cord. A fairly free incision should be made and the stream of fluid directed into a bowl, pressure being meanwhile maintained on the scrotum to empty the sac. The wound is mopped out, and the edges of the sac grasped in forceps, and the whole tunica and testis pulled up through the wound and separated gently from the surrounding cellular tissue, in which all bleeding points must be secured if hæmatoma of the scrotum is to be avoided. This is a serious complication in that it is very liable to infection, with resultant sloughing of the testes; unless, therefore, absolute hæmostasis is assured it is well to drain the scrotum for 24 hours through the lower end of the incision by means of a corrugated rubber drain. Two methods are in vogue for the treatment of the tunica vaginalis, which is now freely exposed, lying on gauze outside the wound :—

1. The simpler method recommended by Winkelbaum can be practised only on thin-walled hydroceles, and consists in everting the testis through the hole in the tunica vaginalis, which is thus turned inside out and secured in this position by a few stitches passing behind the cord and epididymis. The whole rather bulky mass is returned into the scrotum and the wound closed, the object being to secure adhesions between the endothelial lining and scrotal cellular tissue, and so ensure granulation and destruction of the former. The disadvantage of this method is that sometimes the endothelium grows over the cellular tissue and a pseudo tunica is formed, becomes filled with fluid, and recurrence results ; this is the more likely to occur if a small hæmatoma has been present. The percentage of recurrences recorded is, however, small, varying from 1 per cent. to 15 per cent.

2. The surer method consists in clipping away the whole of the parietal portion of the tunica vaginalis, an easy operation, but one accompanied by severe bleeding from the numerous vessels in the tunica. It is advisable to under-run the entire cut margin by a continuous glovers' stitch of catgut to prevent scrotal hæmatoma. The testis is then returned to the scrotum and the wound closed, with drainage for 24 hours if hæmostasis is incomplete.

The wound should be dressed with gauze, retained in position by a suspensory bandage, which acts also as a scrotal support. The patient may get up in four or five days, but should wear a suspensory bandage for two or three weeks.

II. *Hæmatocele.*

The cause of a hæmatocele is nearly always a sharp blow or injury, but may occur as a complication of a malignant tumour of the testis, or in blood diseases such as hæmophilia, scurvy, or severe anæmia. Since in this case local treatment would be disastrous, a blood count should be done if there is any doubt. The tumour presents as a pyriform swelling in the scrotum, which may show subcutaneous bruising, and it can be diagnosed from a hydrocele by the fact that it is not translucent, and from a hernia by having no expansile impulse ; moreover, its upper limit is defined.

Treatment in a recent case consists in supporting the scrotum in a tight suspender, or by strapping, and resting the patient in bed in an endeavour to limit the bleeding. Tapping should, if possible, be avoided for at least 48 hours, as it tends to cause recrudescence of the bleeding ; but it should be practised as a routine after that time has elapsed. After the blood has been withdrawn the affected side of the scrotum should be strapped with zinc oxide adhesive plaster for four or five days, being previously shaved in an adult.

In older cases where clotting has already occurred and thickening of the tunica resulted, the only satisfactory treatment is operation by the inguinal route as for radical cure of hydrocele, and excision of the parietal tunica vaginalis. In very old-standing cases, where extreme thickening and fibrosis of the tunica and scrotal tissues exist, this operation may not be practicable ; in such a case orchidectomy may be undertaken since the testis is usually atrophied and disorganised. The wound should be drained for 24 hours, whichever course is adopted, since oozing from the scrotal cellular tissue is almost impossible to control. Such old-standing cases are not infrequently diagnosed as neoplasms of testis, and it is practically impossible to be certain that a testicular tumour does not coexist with the hæmatocele ; for this reason orchidectomy should be carried out as the operation of choice.

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(To be continued.)

Special Articles.

VACCINIA AND VARIOLA.

DR. MERVYN GORDON'S STUDIES OF THE VIRUSES.

DURING recent years the Medical Research Council has given every encouragement to research work on filterable viruses and the diseases for which they are responsible. In the National Institute for Medical Research at Hampstead and at certain suitable centres elsewhere a general programme of investigation is being carried out. The work undertaken by Dr. Mervyn Gordon at St. Bartholomew's Hospital has now been published as M.R.C. Special Report No. 98.[1] Dr. Gordon chose vaccinia for special study because this virus lends itself readily to experimental work, and in the research now published he has certainly clarified and advanced our knowledge of these viruses and introduced methods which may be serviceable in the study of less known or unknown viruses.

The report is divided into three sections, the first of which occupies about a quarter of the book and gives an account of some previous studies of the virus of vaccinia and outlines the scope of Dr. Gordon's own researches. The middle half is devoted to a description of the author's studies of the virus of vaccinia and the last quarter reports some very interesting experiments with the virus of variola. Appended to the report are five instructive photographs, three of which illustrate the generalised eruption in alastrim and varicella, a coloured picture represents the type of lesions obtained in the experimental work on the shaved skin of the rabbit, and a fifth photographs the agglutination of vaccinia virus.

1. *Introduction.*

For most readers the second and third sections of the report will possess chief interest. We shall not therefore attempt to epitomise the already condensed review of previous studies reported in the introduction, but merely call attention to some of the problems connected with the virus of vaccinia on which this scholarly review throws further light. The filterability of vaccinia virus has been a much debated question, but it is clear that the difficulty experienced by many investigators in getting the virus to pass through a Berkefeld filter is not due to the large size of the organism so much as to its adsorption by the material of which the filter is composed. There is no doubt that the rabbit is susceptible to vaccinia and that immunity may be established by about the sixth day after subcutaneous, subdural, intracerebral, or intravenous inoculation of the virus. Serological methods of study have established the fact that in the course of development of immunity three specific antibodies make their appearance in the blood—namely, a virulicidal or antivirulent substance that possesses the capacity of inactivating vaccinia virus in vitro, a precipitating or agglutinating antibody that causes flocculation of the virus, and a complement-fixing antibody. The precise nature of the antibody which has received the cumbersome and somewhat vague name of " virulicidal " is far from clear at the present time ; a curious attribute is revealed by the observation that the virulicidal power of a serum decays faster than the immunity. The precipitating antibody also needs more accurate definition, and the use of the term precipitin would appear to be premature until it has been shown that the substances in the filtrate upon which the reactions depend are really in solution. The complement-fixing antibodies are of constant appearance in response to infection either by vaccinia or variola virus, and the complement-fixing antibody excited by one of these viruses reacts also with the other; but beyond that the reaction is specific. A point of special interest in connexion with passive immunity is the natural transmission of what appears to be a passive immunity from a mother immune to vaccinia to her fœtus. In a case recorded by Béclère, a child proved immune to vaccinia although twice inoculated cutaneously with active vaccinia virus within a month of birth. The blood of the mother and also that obtained from the umbilical cord both contained the virulicidal substance, although the former was the stronger in this antibody. This transmitted immunity is, of course, transient. Dr. Gordon also refers to the successful treatment of patients suffering from variola with the serum of small-pox convalescents, the blood being collected between the twenty-fifth and fortieth day, when the virulicidal power of the serum is at its maximum.

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[1] Studies of the Viruses of Vaccinia and Variola. By M. H. Gordon, C.M.G., C.B.E., D.M., F.R.S. H.M. Stationery Office. 3s. 6*d*.

The later sections of the report contain important observations on the relations between the viruses of vaccinia and variola, and in reviewing previous inquiries into this question the author remarks that experimental work on serological lines has hitherto been weak on the quantitative side, a defect which, it will be seen, has to some extent been removed by the more accurate technique which Dr. Gordon has introduced. In his work the skin of the rabbit was used as a "reagent" for detecting the presence of vaccinia virus and the test was made quantitative by submitting material to a known degree of dilution before inoculation. He used also the rabbit's skin as a culture medium for providing supplies of this virus by the simple expedient of killing the rabbit and harvesting its lesions at the height of their development. For further details of his technique the original report should be consulted, wherein all experiments are described with exactitude. We pass now to the second section which deals with studies of the virus of vaccinia.

2. *Studies of the Virus of Vaccinia.*

One of the first investigations undertaken was a study of the relative potency of various specimens of calf lymph in use in this country for purposes of vaccination, and after each had been submitted to decimal dilution the degree of their individual capacity to produce vaccinia on the rabbit's skin was determined. We notice from the published protocol that very significant variation existed amongst these lymphs, the most potent being active at a dilution of 1 in 100,000, whereas the weakest only at 1 in 10. This experiment alone points to the urgent need of some compulsory standardisation of vaccine lymphs supplied to vaccinators. As regards their reciprocal immunising action all these individual strains of virus appeared to be identical. Disinfection experiments showed that vaccinia virus is more susceptible to the action of acid than of alkali and that the virus withstands ether comparatively well. But the outstanding feature of the disinfection experiments was the very high value that potassium permanganate appears to possess for destroying in vitro the virus of vaccinia. Experiments on the effect of heat on vaccinia virus showed that an exposure for 30 minutes to 55° C. reduced the active virus by over 99 per cent., but did not destroy it completely. A number of experiments were undertaken to determine the extent to which active immunity to vaccinia can be produced in the rabbit by prophylactic use of this virus after attenuation or destruction by various measures. These proved that a substantial degree of immunity can be produced by vaccinia virus after being heated for 30 minutes at 55° C. provided that the condition of the virus as regards potency was good in the first place and that the dose reached a certain critical or effective strength. This immunity appears four days after subcutaneous injection and thereafter rises rapidly. By the hundredth day a decrease had occurred but a certain degree of immunity could still be detected. Several experiments were designed to study the specific antibodies to vaccinia, and Dr. Gordon has formed the opinion that vaccinia virus excites the production of specific antibodies in the blood of the rabbit after the fashion of ordinary pathogenic bacteria. The complement-fixing antibodies and agglutinins appear to be equally specific for the viruses of vaccinia or variola. Some observations furnished evidence of the presence of lysin in anti-vaccinia serums, but no systematic attempt was made to define the part played by this antibody in immunity to vaccinia. The question as to whether the serum of rabbits immunised against vaccinia is capable of protecting others from this disease was investigated by means of some carefully planned experiments which showed that anti-vaccinia serum which possesses definitely protective properties against the virus of vaccinia may be prepared in the rabbit. One c.cm. of this serum protected against 100 minimal vaccinial doses of virus. Having by means of the cutaneous test of virulence established a sufficiently accurate method of determining the abundance of vaccinia virus in a given suspension, Dr. Gordon proceeded to study the effect on this virus of gravity, centrifugation, and passage through a Berkefeld filter. These experiments definitely proved the virus of vaccinia to be particulate. When a suspension of the virus was allowed to stand 3–10 days in a long narrow tube the top layer was found to be less active than the bottom. The centrifuge reduced the virulence more in two hours than gravity did in three days, but in both these tests the complement-fixation test, being less delicate than the virulence test, failed to detect any difference between the surface and deeper layers. The Berkefeld filter removed the virus so thoroughly from a suspension that all of the three indices of its presence — namely, virulence, complement fixation, and agglutination—although strongly positive before filtration, were thereby rendered negative.

Some particularly interesting experiments are reported by Dr. Gordon on the permeability of various surfaces of the rabbit to the virus of vaccinia. These can be best described in a quotation from the report (p. 87):—

> Employing as chief criterion the production of immunity, evidence has been found that in the absence of mechanical injury and under approximately natural conditions the virus of vaccinia is capable of penetrating the system of the rabbit through the external auditory canal, the ocular conjunctiva, and the nasal mucosa; the last being the most permeable of these three surfaces, since a dose of virus so small as that contained by 0·01 mg. of calf lymph can successfully penetrate by that channel and produce immunity.
>
> When a dose of vaccinia virus of this magnitude, or above, gains access to the nasal mucosa of the rabbit, the animal after an incubation period of 6–8 days develops a condition of acute nasal catarrh accompanied by a mucopurulent discharge which in early stages contains the virus of vaccinia in abundance, and may also contain catarrh bacteria such as pneumococci. This acute stage does not last as a rule for more than a day or two. The catarrh may spread to the conjunctiva. The animal is not seriously ill, and the condition closely resembles that of acute nasal catarrh in the human subject.
>
> Immunity can be produced in the rabbit by the nasal route with vaccinia virus that has been attenuated by exposure to 55° C. for 30 minutes, provided that the dose is of the size found necessary in previous tests of this matter, employing the subcutaneous route. There is reason to believe that similar success may be obtained by the oral route if a large enough dose of the heated virus is given.
>
> When scarification is employed, the skin is more susceptible to the virus of vaccinia than is the nasal mucosa without trauma.

3. *Studies of the Virus of Variola.*

During the period that the investigation of the virus of vaccinia that have been described in preceding sections were in progress the occurrence of several outbreaks of small-pox in this country afforded an opportunity of testing examples of variola virus in a similar way to vaccinia. Dr. J. C. G. Ledingham has recently reviewed in these columns the experimental evidence in favour of the unity of the alastrim and variola virus (THE LANCET, 1925, i., 199). With his views Dr. Gordon appears to be in substantial agreement, and we pass therefore to record briefly the experiments recorded in the M.R.C.

report which bear on this important question. Dr. Gordon found that samples of variola virus obtained from cases of the mild and severe types of small-pox respectively had no effect on the rabbit, though they both affected the monkey when inoculated cutaneously. Vaccinia appeared to protect the monkey against either of these strains of variola virus better than the strains of variola protected that animal against vaccinia. It is particularly interesting to notice that specimens of variola virus from five outbreaks, including three of the mild and two of the severe type of small-pox, were all found to react positively with antivaccinia serum in the complement-fixation and agglutination tests. Dr. Gordon observes (p. 135)—

> As these laboratory reactions appear to be specific for the viruses of vaccinia and variola, there is good reason to believe that they are capable of affording valuable assistance in the practical diagnosis of small-pox, especially in doubtful cases where such help is most needed.

Thus no difference could be detected between the virus of the mild or alastrim type of small-pox and of the more severe type of this disease, except in regard to virulence for the monkey. The argument would have been even more conclusive had it been possible to employ cross tests of the capacity of virus from alastrim to protect a monkey against virus from severe cases of small-pox and vice versa. Nor has an antivariola serum yet been prepared by which the relation of various strains of variola virus to each other and to vaccinia respectively can be determined.

Before concluding our brief summary of this notable contribution to the literature of virus infections, which the laboratory worker will find stocked with valuable experimental detail, we wish to draw attention to three pages of the report which the general reader will find particularly interesting. In the section on the relationship between the viruses of alastrim, variola, and vaccinia (pp. 105–107) Dr. Gordon explains by the aid of a diagram his view that the vaccinia virus consists of equal parts of vaccinia and variola elements, and adds some striking quotations from the writings of Jenner and his biographer, which prove that Jenner himself had distinguished the two different manifestations of small-pox and yet realised their essential unity.

We propose to comment on certain other points raised by Dr. Gordon's work, particularly on the permeability of the nasal mucous membrane of the rabbit to vaccinia virus and the catarrh provoked.

PROCEEDINGS OF THE ROYAL COMMISSION ON NATIONAL HEALTH INSURANCE.*

(Continued from p. 723.)

Society of Apothecaries of London.

(App. LXXXVI. and Q. 21218–21236.)

Evidence was given jointly on behalf of the Society of Apothecaries of London and of the Association of Certificated Dispensers by Dr. A. D. Brenchley and Dr. R. B. C. Wall, by Mr. Graham Bott and Mr. A. Wager.

By Section XVII. of the Apothecaries Act, 1815, it is not lawful for any person (except as in the Section mentioned) to act as an assistant—i.e., a dispenser—to an apothecary—i.e., a Licentiate of the Society—in compounding or dispensing medicine without obtaining the certificate of the Court of Examiners established by the Act. Dispensers who are holders of the certificate have been largely engaged by medical men or public institutions, and it was submitted that the nine months' training required by the Society's syllabus and the examination which candidates for the dispensers' certificate have to pass fully guarantee their fitness to dispense medicines.

The witnesses contended that the position of these dispensers had been prejudicially affected under the National Health Insurance Acts, and urged that holders of the certificate who had three years' practical experience should be recognised under those Acts for all purposes of dispensing supply of medicines. Although such a claim to recognition was adversely reported on by a Departmental Committee in 1913, the witnesses pointed out that the period of training had been raised from six to nine months, and further, that they proposed three years' practical experience in dispensing as a qualification. No claim was made that these dispensers should be allowed to keep chemists' shops.

East of Scotland Dentists' Panel.

(App. LXXVII. and Q. 19900–20114.)

This evidence, which was given by Mr. A. E. Miller and Mr. W. Arbuckle, followed in all essential respects that given by the dental surgeons in England. The recommendations put forward included one as to the necessity for a wide extension of dental treatment, and for its establishment as a permanent benefit, and the need for a separate administration in Scotland. Statements were made as to the dangers of dental disease, the insufficiency of the present "additional benefits," and the advantages of the panel system over a system of clinics.

The witnesses were asked how long it would take before the suggested saving in the cost of medical benefit brought about by a national scheme of dentistry would be reflected in the acceptance by the doctors of a lower capitation fee. The answer was that they were not interested in the question. On the question of a check against over-attendance, the witnesses did not think that the dentists were prepared to accept a scaling down of their bills.

> Suppose in respect of a simple filling, which is 5*s.*, at the end of the year, there was not enough money to pay all your bills, and instead of getting 5*s.* you only got a dividend of 4*s.*, what then ?—I did not think this was to be a sort of gamble.

Evidence of the Association of Poor-law Unions.

(App. XC. and Q. 21632–21725.)

It was submitted by Mr. R. A. Leach on behalf of the Association : That boards of guardians should be treated equally with other local authorities in respect of grants made from the National Exchequer for health work ; that other local authorities should not only be under no disability from entering into agreement with boards of guardians for the performance of any health work which the boards are doing for non-insured classes, but that encouragement should be given in every way to such agreements being entered into ; that in the case of an insured person who has no dependants entering the Poor-law institution for medical treatment the guardians be legally empowered to enforce payment to them by the Approved Society of any benefit payable in respect of the insured person during the period of his or her stay in the institution.

It was contended that the Poor-law medical service, both domiciliary and institutional, was excellent. As regards salaried officers remaining with the guardians, it was explained that while the younger men might hold short-time engagements in the same way as house surgeons in a general hospital, the principal medical officers tended to remain in the permanent service of the guardians. While the National Insurance Scheme had effected a lightening of domiciliary medical relief under the Poor-law, there had been a considerable increase on the institutional side.

As to possible changes in local health services :—

> Your contention is that if medical treatment was put under some new local health service, it would not alter the fact that it was Poor-law treatment under another name. That is your point of view, is it not ?—That is so, and I think myself it would be a great pity that the functions as regards the destitute poor should be entrusted to any authority which has duties other than dealing with public assistance.

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* References to the paragraphs in the printed statements issued as appendices to the reports of the oral evidence are given thus : "App. X. 69," and references to the oral evidence thus—Q. 1369.

Association of Parish Councils of Scotland.

(App. LXXX. and Q. 20535–20636.)

Mr. M. A. Reynard, clerk to the Glasgow Parish Council, gave evidence to the effect that under the National Health Insurance Acts, as at present constituted, it is provided that no portion of the benefits payable under the Insurance Acts are to be allocated to boards of guardians or parish councils, where the insured person has been treated in a hospital belonging to such parish council. It was felt that not only is there an injustice in thus debarring parish councils from receiving payment from these persons for the treatment afforded, but also that, in many cases, the money is not put to a proper use.

The witness said that there was greater readiness nowadays on the part of the doctor and patient to accept Poor-law institutional relief, and yet that with 2256 cases of insured persons who were treated in hospitals by the Glasgow Parish Council last year, only £112 was voluntarily surrendered by the insured persons for treatment, as against an estimated expenditure of £12,000.

It was especially urged that where an insured person died in hospital and had no dependants any accrued sickness benefit should be paid over to the public authority. It was suggested to the witness that the Poor-law authorities had an already existing obligation to persons who were destitute, and that if insurance benefit were paid to an institution the effect would be that contributions by the State and by the employer would be used for the relief of rates.

As to the misuse of the funds by the patient, the witness cited a recent case of a patient who had just gone out of hospital and was squandering his sickness benefit money.

> He was entitled to his National Insurance money from December of last year up to date, and he frankly admitted to me that he had borrowed £3 on the strength of the £20 he was going to get, and he got drunk on it, and he came in demanding a certificate to go to his society and uplift the £20. I said to him, "What are you going to do?" He said, "It will keep me fine for a month anyway, and I will be back on you then."—And that is not an isolated case?—No, there are hundreds more of them. It is because of that that I am asking you to devise some method whereby we will get rid of that terrible waste of public money.

Evidence of Mr. W. J. Braithwaite.

(App. XCI. and Q. 21726–21827.)

Mr. Braithwaite, who was at one time secretary to the Joint Committee of National Health Insurance, confined his evidence to a recommendation that the system of payment per case instead of the capitation system—at any rate, for industrial areas—wanted more consideration by doctors and others than appeared to have been given to it.

The case system, he said, which involves the payment for each case treated, removed the suspicion that a doctor might not be glad to see an insured person, made it possible to introduce specialised services into the insurance system, gave the doctors at least the same interest in the quick recovery of their patients as did the capitation system, and resulted generally in a close approximation to the conditions of private practice.

Mr. Braithwaite said that the difficulty about chronic cases could be obviated by defining the period of an illness which would constitute a "case." Speaking from his recollections of the working of this system in Germany in 1910, the witness said that machinery would, of course, be necessary to guard against the possibility of "cases" being unduly multiplied.

It was suggested in the course of examination that if there was any tendency to multiply cases the psychological advantages of the system might be severely discounted by the friction and suspicion which might be engendered by the machinery of a check. The witness appeared to think that any attempt on the part of one doctor in a district to increase "cases," with the result that the remuneration of the other doctors was cut down, might fairly be left to the doctors themselves to provide adequate safeguards, as with the Manchester attendance system at present.

THE LONDON MEDICAL EXHIBITION.

The Medical Exhibition, which has just been held at the Central Hall, Westminster, proved, as we indicated last week, a decided success both from the point of view of the number of medical visitors and the scope of the exhibits; and the fact that a similar exhibition will be opened in the Philharmonic Hall, Liverpool, on Nov. 24th next for four days shows how much these exhibitions are appreciated. Among the reasons for this are the opportunity which is thus given to the medical man for making himself familiar with the more recent technique while affording him a means of selecting particular drugs and appliances which he may find useful in his daily practice.

While it is impossible to make any exact classification of the exhibits owing to their wide scope and the overlapping among the exhibitors of medical and surgical exhibits, we make the following broad divisions: Drugs and Foods, including Milk and its Preparations; Instruments and Appliances; Spas and Waters; and Medical Publishers.

Drugs and Foods.

Allen and Hanburys. Ltd. (37, Lombard-street, London, E.C., Vere-street and Wigmore-street, W.). in addition to their standard dietetic and pharmaceutical preparations, drew particular attention to Iodolysin, a soluble compound of thiosinamin containing 47 per cent. of iodine, which in many hands has proved so useful in rheumatism and allied conditions, and to sodium tetrabromphenolphthalein, for the X ray diagnosis of diseases of the gall-bladder.[1] Other notable exhibits of this firm were "Osmo" Kaolin for intestinal infections, the Lister Institute products—sera, vaccines, &c.—and Antivirus for use as a specific immuniser and bactericide in the treatment of local infections.—The exhibit of Burroughs Wellcome and Co. (Snow Hill Buildings, E.C.) provided a striking example of progress in scientific pharmacy. Amongst the more recent additions was "Hypoloid" Bismuth Metal, which places the potent spirillicidal properties of bismuth in isotonic glucose solution at the disposal of the physician; and "Kharsulphan," for subcutaneous or intramuscular injection, which provides a further simplification of arsenobenzol therapy; and "Iodicin," a product containing a high percentage of iodine in organic combination, in a pleasant, palatable chocolate base, is a very suitable means of administering iodine to children. Intensive iodine treatment is also facilitated by tabloid "Iodicin" capsules, each of which secures the administration of one grain of iodine in organic combination. "Ethidol," which contains 20 per cent. of iodine, is an allied product for use by injection into tuberculous abscess cavities, or for inunction in neuritis, rheumatoid arthritis, and sciatica. Vaccines, sera, tuberculins, and diagnostic products, prepared at the Wellcome Physiological Research Laboratories, were also displayed.—Boots Pure Drug Company, Ltd. (Nottingham), had an exceedingly fine display of synthetic and medicinal chemicals, solution tablets specially made to facilitate the rapid solution of drugs, demulcent and medicated pastilles, and dressings and surgical sundries. Among antivenereal preparations were Stabilarsan, Bismostab, Thiostab, and Acriflavine, while insulin and pituitary extracts were prominently displayed.—The Anglo-French Drug Co., Ltd. (238a, Gray's Inn-road, W.C.), showed a wide selection of pharmaceutical preparations, those receiving particular attention being Adrepatine, a pluriglandular compound for the treatment of hæmorrhoids; Creosal Syrup, combining guaiacol, phosphoric acid, and calcium, for the relief of cough; Digibaine, an association of digitalin and strophanthin; Iodaseptine, an intravenous bactericide; and Orargol, a suspension of colloid silver and gold. Labat syringes and needles were also shown.—Burgoyne. Burbidges and Co., Ltd. (East Ham, E.), displayed Cooper's Colloids in comprehensive range, including argentum, arsenium, ironmalt, hydrargyrum, manganese, iodum, and sulphur, the latter being for bath medication and for internal administration.—Bengué and Co. (52, Charlotte-street, W.), in addition to their well-known Ethyl Chloride, showed various pharmaceutical preparations, including Eupurgo for chronic constipation and hæmorrhoidal conditions; Muthanol, radio-active bismuth hydroxide suspended in olive oil, for use as a non-toxic spirillicide; and Forxol, a preparation of nucleogenic vitamins, for neurasthenia and diseases of nervous origin.

Oxo, Ltd. (Thames House, Queen-street Place, E.C.). In addition to the well-known products of this firm, Oxo, Oxo cubes, Hospital Oxo, beef essence, and Lemco, much interest was shown in their various "Oxoid" gland extracts, tablets, and fluid. Among them Pitoxylin, which is a new "Oxoid" endocrine preparation specially suitable for obstetrical, surgical, and general use, and consists of a sterile solution of the purified oxytocic and pressor substances from the posterior lobe of the pituitary gland. It is protein-free, and the undesirable ingredients have been eliminated so that the risk of inducing anaphylactic troubles when using the preparation is entirely avoided. Each batch manufactured is adjusted to a definite standard of activity.—G. W. Carnrick Co. (London agents: Brooks and Warburton, 40, Lexington-street, W.). Single gland and pluriglandular substances of many kinds were shown at this stand, where a 253-page book, "Organotherapy in General Practice," was at the disposal of medical men. Among the preparations to which attention was particularly drawn were Hormotone and Trypsogen.—Virol, Ltd. (Hanger-lane, Ealing, W.), in addition to Virol and Virolax, demonstrated the nutritive properties of Virol and Milk for nervous and mental fatigue after fevers and in convalescence generally, a golden-coloured powder which requires only the addition of hot water, and has been found of great use by nursing mothers.—Bovril, Ltd. (148–166, Old-street, E.C.), exhibited Bovril and Invalid Bovril, and Bovril and milk; and Vitmar, Ltd. (Callard's Vitamin Foods) (Standen-road, Southfields, S.W.), showed several forms of their food products.—Chas. Zimmermann and Co., Ltd. (9 and 10, St. Mary-at-Hill, E.C.), drew attention to Asthmolysin, a suprarenal-pituitary compound for relief in asthma, especially if due to hormone deficiency; Idozan, a therapeutic agent used in anæmia; and Posterisan, in the form of ointment and suppositories, a new vaccine therapy for local application in the treatment of hæmorrhoids and allied conditions.—The chief features of the exhibit by Oppenheimer Son and Co., Ltd. (179, Queen Victoria-street, E.C.), were Roboleine, now well known as a reconstructive food containing animal fats, maltose, diastase, and natural nitrogenous and phosphoric compounds with the three vitamins; Colloidal and organotherapeutic preparations, and the admirably adapted method of administering these last two by "Oscols" and Palatinoids. Particular attention was called by this firm to their automatic oxygen generator which is portable and safe and renders oxygen instantly available for medical use.—Parke, Davis and Co. (50, Beak-street, Regent-street, W.) had quite an interesting and attractive display of pharmaceutical preparations, among them being Dibromin, a practically non-toxic germicide used in dilute solution as a wet dressing, douche, or gargle; Metagen, a concentrated vegetable extract containing water-soluble and fat-soluble vitamins; and Metagen and cod-liver oil emulsion; Olgar, containing liquid paraffin of high viscosity with agar; and Neo-Protosil, a readily soluble colloidal silver iodide compound. This firm also showed vaccines prepared under the direction of Sir Almroth Wright at St. Mary's Hospital.—Lionel Cooper (14, Henrietta-street, Covent Garden, W.C.) had an interesting exhibit, and particularly noticeable among the many medical preparations was Milesia, a tablet containing 3 gr. of magnesium hydrate, Presoiod, an iodine solution, and Sil-Al, a physiologically pure silicate of aluminium.—C. H. Hewlett and Son, Ltd. (35–42, Charlotte-street, and 83–85, Curtain-road, E.C.), exhibited a selection of their antiseptic cream, medicated skin lotions, formalin mouth wash (Gargar); Hæmorrhaline, an improved ointment for hæmorrhoids; and Hormonigen, a combination of pluriglandular extracts; as well as surgical instruments, dressings, and sprays.—Howards and Sons, Ltd. (Ilford, E.), who supplies ether for anæsthetic purposes to many well-known hospitals, made a prominent feature of their Hydrogen Peroxide and of their Agotan brand of Phenylcinchoninic Acid as a remedy for rheumatism, gout, rheumatoid arthritis, brachial neuritis, neuralgia, sciatica, and gouty skin diseases.—Menley and James, Ltd. (64, Hatton Garden, E.C.), showed Iodex, a therapeutically active iodine in an emollient base, which does not stain or irritate the skin and is quickly absorbed.—W. Martindale (10, New Cavendish-street, W.), who displayed a large assortment of drugs and medical preparations, put up in attractive forms, drew attention to their absorbent moss surgical dressing; Aspriodine, a new compound of aspirin and iodine, as the name implies; and Phenoltetrabromphthalein, Tetraiodophthalein, and Tetrachlorphthalein for gall-bladder visualisation and liver function tests. This is referred to in the "Extra Pharmacopœia" of Martindale and Westcott, Vol. II., 1925.—H. R. Napp, Ltd. (3 and 4, Clement's Inn, W.C.), attracted much attention by their demonstration of rats showing the growth of carcinoma produced by the injection of tumour pulp and by the display of wax models showing the treatment of tuberculosis and allied mixed infections by cutaneous inoculation. Among the preparations shown were Ponndorf, for cutaneous inoculation in tuberculosis; Xifal Milk, a combination of sterilised milk; a vaccine for injection in epilepsy, myocarditis, and infantile paralysis; and Hypertherman, an injection for the protein body therapy of obesity. Vaccines and sera were shown in variety.—Hoffmann-La Roche Chemical Works, Ltd. (7 and 8, Idol-lane, E.C.) Allonal, which was prominently displayed at this stand, was reported upon in The Lancet as recently as Oct. 3rd, p. 706, as well as chocolate Iodostarin for the prophylaxis and treatment of simple goitre. Sedobrol Sedative Bouillon was also shown. This consists of sodium bromide incorporated in a mass of vegetable extractives put up in tablets. It is prepared by dissolving one or two tablets in a cup of boiling water. It is non-poisonous and non-narcotic.—May and Baker, Ltd. (Battersea, S.W.), showed a very fine range of drugs and chemicals, especial prominence being given to anti-venereal remedies, including Novarsenobillon, which has been approved by the Ministry of Health for use under the Venereal Diseases Regulations. This remedy has also been used in yaws, malaria, and rat-bite fever. Ametox, a purified and sterilised sodium thiosulphate for use as an antidote to metallic intoxication, especially in arsenical dermatitis and bismuth and mercury stomatitis, was shown among other drugs, as well as Mestarine, the sodium salt of theobromine N-acetic acid, which is a new addition to diuretic medication possessing stability and ready solubility.—Schering, Ltd. (3, Lloyd's-avenue, E.C.), prominently displayed samples of the medicinal products from their laboratories; Atophan, phenylchinolin carboxylic acid, for all diseases associated with uric acid diathesis; Atophanyl, a solution of sodium salts of atophan and acid acetyl sal. with 0·16 per cent. of novocaine, for injection in the treatment of laryngeal catarrh and other affections; and Maturin (the original product phloridzin), a preparation which produces artificial glycosuria in early pregnancy for the diagnosis of which it is employed.—W. Dederich, Ltd. (Stanley House, Dean Stanley-street, Westminster, S.W.), drew attention to Ichthyol, a sulphonated schist oil preparation containing a high percentage of sulphidic sulphurs. Other preparations shown by this firm were Ichthargan and Ichthoform, the former containing 30 per cent. of silver, the latter being an ichthyol-formaldehyde preparation. Mergal, a mercurial compound for the treatment of syphilis by oral medication, also received prominence.

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[1] The Lancet, July 11th, 1925, p. 68.

Angier Chemical Company, Ltd. (86, Clerkenwell-road, E.C.), displayed Angier Emulsion (petroleum and hypophosphites), each fluid ounce of which contains 33⅓ per cent. of purified petroleum, 9 gr. of combined hypophosphites of lime and soda, with chemically pure glycerine.—Crookes Laboratories (22, Chenies-street, W.C.), devoted entirely to the manufacture of colloids, showed a wide range of these products, and with regard to Collosol Ichthyol claim with pride that it is a natural ichthyol of entirely British origin.—Anglo-American Oil Co., Ltd. (Albert-street, Camden Town, N.W.), exhibited their well-known Nujol and Mistol, and in addition, other preparations of liquid paraffin, including Semprolia, a petroleum jelly in both yellow and white colour, which can be conveniently used as an ointment base, and Semprolax, a palatable preparation containing 80 per cent. of liquid paraffin.—Dimol Laboratories, Ltd. (40, Ludgate-hill, E.C.), showed their product Dimol, a benzene derivative, dimethylomethoxyphenol in combination with the tri- and tetramethylopheno, is a bactericide which is claimed to be 35 times more efficient than pure phenol; it is not absorbed and is voided with the fæces. Indicated in putrefactive and other bacterial invasions of the intestinal tract, it is put up in the form of pulverettes, syrup, pastilles, lavage powder, ointment, snuff, and as a dentifrice.—Deshell Laboratories, Ltd. (Premier House, 150, Southampton-row, W.C.), exhibited Petrolagar, an emulsion of liquid paraffin and agar-agar, which is supplied (plain, alkaline, phenolphthalein, and unsweetened). It contains 65 per cent. of pure mineral oil of high viscosity and 10 per cent. of agar-agar.—British Alkaloids Co. (104, Winchester House) displayed antiseptics and germicides.

A large number of illustrated pamphlets showing the many uses of Antiphlogistine in medical and surgical practice and in dentistry were displayed by the Denver Chemical Manufacturing Co. (London, E.), and their product, the well-known antiseptic poultice which is indicated in inflammatory and congestive conditions, received much attention.—Genatosan, Ltd. (Loughborough, Leicestershire), in addition to Sanatogen, Genasprin, and Formamint, exhibited a new detoxicated vaccine prepared from *B. pneumosintes* for the treatment and prophylaxis of influenza.—Kolynos (Incorporated) (Chenies-street Laboratories, W.C.) showed their well-known non-gritty dental cream, which does not stain the teeth and is very refreshing and pleasant to use as well as being a reliable antiseptic, and the Pepsodent Co. (42, Southwark Bridge-road, S.E.) their equally well-known acid dentifrice, which stimulates the salivary glands and gives a brilliant polish to the teeth. It contains no injurious ingredients.—Jeyes' Sanitary Compounds Co., Ltd. (64, Cannon-street, E.C.), had a display of Cyllin in its many adaptations as a bactericide, whose slight toxicity makes it suitable for employment as an internal or external antiseptic. For medical and surgical uses the preparation has a Rideal-Walker co-efficient for *B. typhosus*, 24 to 26.—Newton Chambers and Co., Ltd. (331, Gray's Inn-road, W.C.), exhibited the Izal disinfectant specialties: Thermogene Co., Ltd. (Haywards Heath, Sussex, and Victoria Embankment, E.C.), showed their curative wadding, Thermogene, which stimulates the circulation in affected parts and relieves congestion and inflammation: J. C. Eno, Ltd. (Pomeroy-street, S.E., and Victoria Embankment, E.C.), drew attention to their effervescent saline laxative, Eno's Fruit Salt; and Keen Robinson and Co., Ltd. (incorporated with J. and J. Colman) (London and Norwich), showed various preparations of barley and mustard.—The City SoapWorks (Wapping, E.) exhibited Gibbs's various soaps, shaving creams, and dental cream; the Pinoleum Co., Inc. (Distributing agents, Brooks and Warburton, 40/42, Lexington-street, W.), demonstrated the use of Renoleum, an anodyne, antiseptic, and emollient preparation for medication of the mucous membrane of the throat and nose; Pastilles, Ltd. (124, High-street, Shoreditch), had a display of Lakerol Bronchial Pastilles; and Irving's Yeast-Vite Laboratories (Cecil House, Holborn Viaduct, E.C.) showed yeast tablets.

Jaeger Co., Ltd. (95, Milton-street, E.C.), displayed their well-known wool underwear. Endocrines, Ltd. (distributors for the Harrower Laboratory, 72, Wigmore-street, W.), exhibited pluriglandular preparations under the name of Polycrines. There were over 30 combinations of ductless glands in tablet form ("sanitablet"), every dose being enclosed in an airtight damp-proof envelope. Among new preparations are Sol. Placento-Luteum Co., for use in the vomiting of pregnancy, while attention was also particularly called to Adreno-Spermin Co. for neurasthenia; Pan Secretin Co., for diabetes; Thyro-Ovarian Co., for dysmenorrhœa; and Gonad Co. for rejuvenation. Many of the preparations are put up in ampoules for hypodermic injection. This firm presented free to medical men a 300-page book, "A Manual of Pluriglandular Therapy."—Organotherapeutical products were also shown in large variety by the British Organotherapy Co., Ltd. (22, Golden-square, Regent-street, W.). Among others noted were the Lymphoid Compound and Lymph Serum, pluriglandular preparations which have been used in nervous disorders resulting from the war and otherwise and in securing the rejuvenation of elderly people; extracts of the brain and spinal cord; Corpus Luteum Extract; Eukinase, prescribed in the treatment of intestinal indigestion and chronic constipation; Gastric Mucosa Extract, for gastric dyspepsia; Hepatic Extract, for liver torpor; and Lymphatic Gland Extract, for the treatment of adenoids without operation. The preparation Hæmatothyroidine was also shown. This is employed in the treatment of exophthalmic goitre, as well as Saccharomycin, an isothermal, isotonic, and living yeast specially prepared for medical use.—Armour and Co., Ltd. (Queen's House, Kingsway, W.C.). At this stall a large selection of Endocrines were shown in the form of desiccated powder, tablets, capsules, liquors, and hypodermic solutions. Digestive ferments of all kinds are manufactured in the Armour Laboratories in Chicago, as well as surgical catgut and such specialties as glycerine and extract of red bone-marrow.

The Garden City Pure Food Co., Ltd. (95, Westminster Bridge-road, S.E.). The Soya Double Cream, Soy-Yeast, Soya Biscuits, and Soya Flour exhibited by this firm are primarily intended for diabetics, and there is an entire absence of starch or sugar in their composition. The Double Cream and Soy-Yeast are in powder form and are easily converted into food drinks. By a special process the unpalatable flavour of Soya preparations has been greatly modified and the products should make a useful addition to diabetic diet.—Mead's Infant Diet Materials (Distributors, Brooks and Warburton, 40/42 Lexington-street, W.). The Dextri Maltose and other infant diet materials prepared by this firm are intended to be prescribed by a medical man, consequently no directions are printed on the containers. The foods include Mead's Casec, used in the preparation of protein milk for the treatment of fermentative diarrhœa; Mead's Powdered Protein Milk with lactic acid; Mead's Certified Cod-liver Oil; and a reconstructed milk powder, Re-co-lac, a breast-milk substitute.—Savory and Moore, Ltd. (143, New Bond-street, W.), prominently displayed their well-known food, which can be prepared to approximately resemble mothers' milk in composition, together with their peptonised milk preparations.—Therapeutic Foods Co. (Energen Works, Bridge-road, Willesden, N.W.) prominently exhibited their starch-reduced foods standardised for use in dietetic treatments with constant proportions of carbohydrate and protein. These consisted of bread, biscuits, and flours, as well as cocoa essence.—Prideaux's Pure Casein and Life Food Co., Ltd. (Southwark-street, S.E., and Motcombe, Dorsetshire), exhibited dried full cream milk prepared entirely from new milk under hygienic conditions.—Cow and Gate Milk Food (Cow and Gate House, Guildford, Surrey). The product of this firm is manufactured by the West Surrey Central Dairy Co., and is also made in Dorset and Somerset from the milk of prize herds. The process of manufacture eliminates all contamination, and it is claimed for the food that it produces in infants results identical with those of healthy breast milk.—Glaxo Dried Milk Products (56, Osnaburgh-street, N.W.) showed their various forms of dried milk, Glaxo Malted Food, Glax-Ovo, and their Diabetic Milk Food. Prescription (Humanised) Glaxo was also made a prominent feature of the exhibit; and Ostelin, a high concentration of the antirachitic unsaponifiable fraction of cod-liver oil, called forth many inquiries. The Maltine Manufacturing Company's products have now been taken over by this firm.—Hooker's Malted Milk (Thew Hooker and Gilby, Ltd., Buckingham). This well-known preparation, which is completely soluble in either hot or cold water, is quickly prepared, and is of use both in sickness and health. —Horlick's Malted Milk Co. (Slough, Bucks). This is also a well-known preparation which had a prominent display. — Trufood, Ltd., Creameries (Wrenbury, Cheshire; offices, Lever House, Blackfriars, E.C.), showed their Humanised Trufood, which closely approximates to breast milk; Trufood Full Cream for use from 9 months onwards, for nursing mothers and for invalids; and Secway, a pure, sweet whey powder which can be used as the basis of feeding in gastric disorders, even in the case of young infants.—S. Guiterman and Co., Ltd. (35/36, Aldermanbury, E.C.), exhibited Cereal Meal, a food whose object is to produce normal daily intestinal evacuation; Brusson Jeune and Co. (311, Gray's Inn-road, W.C.) Gluten breads and foods for diabetes, obesity, gout, indigestion, rheumatism, and invalid dietaries; A. C. Fincken and Co. (197, Great Portland-street, W.) H-O Quick Cooking Oats; and Sister Laura's Infant and Invalid Food Co., Ltd. (Springfield Works, Bishopbriggs, Glasgow), a food for infants and invalids.—Cadbury Bros., Ltd. (Bournville, Birmingham), supplied to visitors cups of their delicious beverage and a book of useful recipes for making chocolate cakes and sweets.

(*To be concluded.*)

BUCHAREST.

(From our own Correspondent.)

Reform of the Workmen's Compensation Act in Roumania.

The Minister of Public Welfare has delegated Dr. George Cimponariu, the director of the central "sick club," to find out how unification of the sick club system may be accomplished, as the States recently incorporated into Roumania—namely, Transilvania, Bessarabia, and Bukovina—have each a different system, though in Bessarabia the treatment of workmen, both from a social and from a medical point of view, is very primitive. The most perfect system is the Transilvanian (formerly instituted by Hungary), and on it the new scheme will be modelled. Dr. Cimponariu says that the most important task of the sick club will be not only to give temporary help to the patients, but also to exercise medical control over all industrial undertakings and factories, and thereby combat the industrial diseases. The protection of workmen against tuberculosis will also claim attention. Mothers will be granted a considerably greater support than prescribed by the law. Under the new scheme a working mother will be granted a holiday at the time of her confinements, commencing four to six weeks previous to the event and continuing for eight weeks thereafter. Infants will be under medical supervision up to a certain age. In the larger factories day homes will be established where working mothers can feed their babies. It is unfortunate that no satisfactory method has as yet been suggested for protection against venereal diseases, which claim victims among the working class. According to recent statistics, every workman loses, on an average, 26 working days in a year on account of venereal diseases. The Central Workmen's Insurance Offices have also planned the erection of sanatoriums, although the present low rate of exchange prevents building. For this reason contracts were made with various private sanatoriums for a certain number of beds.

The Teaching of Roentgenology.

The study of roentgenology has for some time been compulsory in every university in Roumania, although students were not obliged to pass an examination in it. Recently, however, examinations in that subject, both theoretical and practical, have been made obligatory. If a student fails he has to continue the subject for two seasons. Coincidently with this ruling, all university clinics have been furnished with X ray apparatus of the transformer type, both for diagnostic and therapeutic purposes, and also the application of " deep therapy."

Medical Certificates for Marriage.

After the introduction of many medico-social institutions, as, for example, the nationalisation of the medical treatment of workmen, the establishment of free venereal and tuberculosis clinics in every large town, the granting of State support to the victims of industrial accidents in cases where the employers have gone bankrupt, the Government sent out to various countries a commission to study the different methods of controlling the health of couples intending to marry. The commission recommends the method practised in certain of the States of North America. It proposes to forbid all matrimonial offices to wed couples unless they produce a medical certificate (from any physician they may choose), the certificate to be signed by a sanitary officer, who has the right to examine the parties if any doubt arises as to the validity of the certificate. The discussion of this question in the daily papers is prompting intelligent fathers to demand, before consenting to the marriage of their daughters, that the suitor produce medical evidence as to his general health and freedom from venereal disease.

The Price of Alcohol Raised.

The pharmaceutical papers of Roumania are lamenting the new regulations regarding the alcohol monopoly, which extend the general tax on alcohol to alcohol used medicinally, which has hitherto been exempt. The manufacturers of perfumes and cosmetics succeeded in getting the tax reduced for their use, in order to protect this industry, which lately, owing to the intensive culture of roses and the manufacturing of rose-oil, has grown by leaps and bounds. Pharmacists are allowed to use a cheaper alcohol for tinctures and fluid extracts, but only if the process of preparation is done under the supervision of an official. The regulations provide for new officials for this purpose, and a medical paper, the *Viata Medicala*, remarks that the number of pharmacists will dwindle as the result of this measure, and consequently the manufacture of tinctures, and so forth, will fall into the hands of the manufacturing chemists, as was the case in Germany, whence this new regulation was copied.

IRELAND.

(FROM OUR OWN CORRESPONDENT.)

Medical Men in the Senate of the Irish Free State.

THE final results of the election of 19 members of the Senate were announced last week. Two medical men are among the successful candidates. One of these, Mr. H. S. Barniville, was a previous member of the Senate, having been nominated one of the original Senate by President Cosgrave in 1922. He is one of the surgeons to the Mater Misericordiæ Hospital, Dublin. The other medical man who has been elected is Sir Edward Coey Bigger, formerly medical member of the Local Government Board for Ireland and chairman of the Irish Public Health Council. Sir Edward Bigger has always been an ardent influence in matters of health. He was one of the members of the Vice-Regal Committee on the Poor-laws which reported nearly 20 years ago, and in 1919 he was chosen as chairman of the Irish Public Health Council, which subsequently sent in a report recommending many drastic changes.

Royal Academy of Medicine in Ireland.

The annual elections at the Royal Academy of Medicine took place last week. Sir James Craig remains in office as President, and Dr. T. P. C. Kirkpatrick as general secretary and treasurer. The following, with representatives of the sections, constitute the General Council: Dr. A. F. Dixon, Sir J. W. Moore, Dr. T. G. Moorhead, Dr. G. E. Nesbitt, Dr. R. J. Rowlette, and Sir W. I. de C. Wheeler. The following Presidents of Sections have been elected: Medicine, Prof. F. C. Purser; Surgery, Mr. R. C. B. Maunsell, President R.C.S.I.; Obstetrics, Dr. D. G. Madill; Pathology, Prof. J. W. Bigger; Anatomy and Physiology, Dr. C. M. West; State Medicine, Prof. V. M. Synge.

The Services.

ROYAL NAVAL MEDICAL SERVICE.

Surg. Lt.-Comdrs to be Surg. Comdrs.: G. S. Harvey, W. H. Murray, and G. H. Hayes.

ROYAL NAVAL VOLUNTEER RESERVE.

A. J. Gilbertson, late Surg. Lt.-Comdr., re-entered as Surg. Lt.-Comdr.

ROYAL ARMY MEDICAL CORPS.

Maj. T. W. Stallybrass retires on ret. pay.

Capt. F. K. Tomlinson retires, receiving a gratuity.

Capt. N. Cantlie is restd. to the estabt.

REGULAR ARMY RESERVE OF OFFICERS.

Col. R. J. Blackham, late R.A.M.C., having attained the age limit of liability to recall, ceases to belong to the Res. of Off.

ROYAL AIR FORCE.

The undermentioned Flying Officers are promoted to the rank of Flight Lt.: T. V. O'Brien and F. W. G. Smith.

INDIAN MEDICAL SERVICE.

The King has approved the promotion of the following officers: Majs. H. W. Pierpoint, W. D. H. Stevenson, H. P. Cook, P. S. Mills, W. J. Fraser, C. A. Godson, R. H. Lee, F. P. Warwick, W. A. Mearns, and R. G. G. Croly to be Lt.-Cols.

Capts. G. H. Mahony, G. Covell, W. R. Stewart (Bt. Maj.), Venkatasubba Mahadevan, and A. C. L. O'S. Bilderbeck to be Majs.

Capt. H. J. Rice is confirmed in his rank.

Capt. Vasantrao Dinanath Madgaokar relinquishes his temporary commission.

In the Legislative Assembly at Simla on Sept. 2nd, in spite of Government opposition, a resolution was carried that all further recruitment to the Indian Medical Service shall henceforth be only by an open competitive examination held simultaneously in England and India from the year 1926.

Captain E. R. Daboo officiates as Civil Surgeon, Sadiya, Assam. The Executive Council of Lucknow University has elected Major H. Stott to represent the University on the Medical Council of the United Provinces of Agra and Oudh. Major T. T. H. Robinson, D.S.O., has been appointed Civil Medical Officer, Ranikhet, vice Lieut.-Colonel W. C. Croly, D.S.O. On return from leave, Dr. W. G. Wince and Dr. C. H. Mason have been re-posted as Civil Surgeons at Wardha. Captain P. Verdon has been appointed District Medical Officer at Guntur. Major B. Gale has been posted to Amballa. Dr. Kali Charan Dube has been appointed Medical Officer of Health at Meerut, vice Dr. Nand Lal Varma, who reverts to the Provincial Medical Service. Colonel H. O. R. Browne Mason officiates as D.D.M.S. Western Command, vice Major-General S. F. St. D. Green, who has proceeded on leave.

THE MOTOR SHOW AT OLYMPIA.

OCT. 9TH–17TH.

(BY OUR MOTORING CORRESPONDENT.)

THE nineteenth annual International Motor Car Exhibition, held by the Society of Motor Manufacturers and Traders, which closes to-day (Saturday) has fulfilled the expectations of everyone. The motor show has now been for a long time a national institution, and thousands, not only of the trade nor even of motor-car owners, but also of the vast car-less public, look forward to it eagerly, for all the cars they have recognised and coveted stand here in the glory of their show finish, open to be inspected and admired, opened and shut, sat in, and in imagination driven at great speed along straight black roads. Many makers have their engines sliced open, so that we can see for the first time exactly how sleeve valves or overhead camshafts work, and such anticipated wonders as the new six-cylinder Bentley, the "New Phantom" Rolls with six brakes, and the 25–70 sleeve-valve Vauxhall are at last realised.

A Retrospect.

The habitual visitor to Olympia always feels, the moment he enters the building, that he has come home. Except that it is half as large again, there is no apparent difference between the show to-day and the show of 1912. A few new names appear on the great white panels over the stands and the lights may be brighter and more numerous. The noise of the horns in the gallery is gone for ever. But the stands and the cars on them are neither larger nor more splendid than they were then, and unless one looks very closely neither machinery nor bodywork seems to have altered in anything but small detail. Actually, however, the change is vital. The doctor who wanted in 1912 to spend £200 on a car was tied down to about half a dozen makes, nearly all heavy and under-powered. There were no electric starters and electric lights, and none of those side-screens and screw-down hoods that make any open car waterproof in three minutes to-day. Most of the accessories were extras, and the tool outfit supplied with the car was heart-breaking. Next year came a rush of 10 h.p. two-seaters that, led by the far-sighted experiment of the Morris-Cowley, grew into eleven-nines after the gap made by the war, and then a year or two later into thirteens and fourteens, while a fresh crop of sevens, eights, and nines with incredibly powerful engines sprang up in their place.

There is no comparison at all between the Talbot or Gwynne 8, or the Austin or Jowett 7 of to-day and the A.C. and Singer 10 or the Morris-Oxford 9 of 1914, and the reason is the immense increase in knowledge that the war gave to the designer of all kinds of internal combustion engines, and in particular those of aeroplanes. A glance through a buyers' guide will show that power is now quoted in two figures—e.g., 8–18, 15–50, 20–60—the first being the taxable power and the second the horse-power the engine actually gives at its best speed. It is not an exaggeration to say that, size for size, engines are three times as powerful as they were before the war, and a glance at the Austin 7 or the Aston-Martin 11 shows that this improvement is not confined to engines with overhead valves, though more and more makers are fitting them.

1925.

The power-price of most cars is now back again approximately to what it was in 1914 and is not likely to go any lower, but it now includes a perfect lighting and starting set, an "all-weather" equipment that closes the car in almost as completely as a permanent top, a whole shop-full of accessories like mirrors, dashboard-lights, screen-wipers, luggage grids, clocks, air-stranglers, and safety-locks, and very often front-wheel brakes as well. The competition of the cheap American cars has provided the chief impulse to this development, but our manufacturers have responded to it in a way that does the country great credit. The Standard Motor Co. gave us the all-weather screening and Morris Motors took the lead in supplying the cheap car with all the accessories of the expensive one, especially one that is worth more than all the others put together, the system of greasing the whole chassis with one gun that fits on to special nipples.

Four-wheel brakes were fitted on the Argyll and the Isotta-Fraschini nearly 20 years ago, but only became popular about the beginning of last year—chiefly because of the way in which they contributed to the success of the Peugeots in the Grand Prix the year before. There is now hardly a car on which they cannot be fitted if required, and many have them as standard. They are excellent if they are properly adjusted, but apt to be highly dangerous if they are not. The front wheels must brake together, and most people prefer them to come on later than the back.

Returning to cars in general, however, we see that the 11·9 h.p. of 1½ litres, so general three years ago, is losing its hold on popular favour. There are now a great many twelves, such as the Morris-Oxford, Hampton and Bayliss Thomas, and fourteens and fifteens like the new Triumph, the Lagonda, and the Hillman, that are the descendants of former eleven-nines. The new 2½-litre car is very nearly the old family 15·9 that was so popular once, and it is most pleasant to see this convenient size reappearing. Five people could always be sure of finding in it ample room for their feet and a certain amount of luggage as well.

Two Examples of Modern Practice.

A very good example is the *Beardmore* 16–40 h.p. These manufacturers are well known for their excellent aircraft engines and their taxis, and the new 16–40 will not fail to increase their reputation. They make a saloon for £550 in which there is that rarest of things, a really comfortable driving seat with all the controls in reach on the right-hand side. The pedals are adjustable and a wheel-base of 10 ft. 6 in. gives ample leg room. All these cars have front wheel brakes and stand close comparison with the £1000 class in every way. There is no better value to be found in the whole show.

The *Triumph* 15–50 h.p. is a similar model, but a little smaller. Triumphs were the engineers who rescued the British motor-bicycle from extinction in the first decade of the century; a year or two ago they produced one of the finest small cars in the country, and have now passed on to a 2-litre chassis. It would be very hard to beat the open five-seater at £395 or the four-door saloon at £495 or £460, but it is a pity they only fit three gears. The front wheel brakes are hydraulic, and every conceivable gadget is fitted, including a very good tool kit.

Tool Kits.

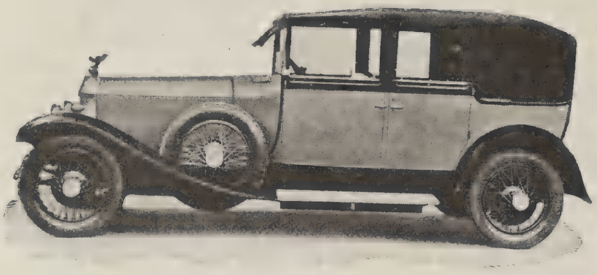
The result of a careful inspection of tool kits at the show was reassuring. Even the very cheap cars now carry a modest but perfectly adequate set, and the makers of the more expensive ones take care that their jacks and pumps shall be up to the standard of their cars, which they did not always do a few years back. Even so, there are very few who include a box of the spare nuts and small parts, the absence of which will sometimes keep a car in dock for a week. It was surprising, too, in how few cars a six-foot person could stretch his legs and at the same time reach gear- and brake-levers without leaning forward. Hand-brake levers are much longer and better placed than they were; the ones on the Lancia, Darracq, and Talbot pull upwards from the floor and give a tremendous leverage, but most of those on the right-hand side are far too near the coachwork. The A.C. has an excellent one, and nearly all the American cars are very good. One Italian car has a spade handle, and it is a pity more makers do not copy this, as it gives a natural grip, particularly to the left hand. On the whole, though, makers of small cars are inclined to omit the extra four inches which make all the difference, especially the Morris, where the hand-brake is the one blot on an otherwise beautiful control system.

Coachwork.

Body-work as a special industry remains at the same level of perfection.

Barker's Cabriolet de Ville has a folding roof that will cover all the seats or the back only as required, and will fold up completely in fine weather. As its protection when fully closed equals that of a saloon, it combines the advantages of all types of bodies. A splendid specimen of their work is on the large Rolls-Royce (Fig. 1) in blue and black, with upholstery in plain light cloth and a folding arm-rest.

Fig. 1.



Rolls Royce. Body by Barker.

Mann, Egerton and Co., Ltd., showed a 14–40 Vauxhall saloon and a 25–85 Daimler with their own four-door saloon body painted powder blue. An interesting exhibit was a 30 h.p. Minerva, enclosed drive limousine, the body staged in an unfinished state, from which could be judged the excellence of the coachwork before it was painted.

Offord and Sons, Ltd., exhibited among other cars a 14 h.p. Crossley saloon landaulette.

Windovers, Ltd., had fitted another of the Rolls exhibit, a 20 h.p. with a six-seater Brougham Limousine (Fig. 2) in black—a most handsome town car.

Belgravia Coachworks had a very attractive 3/4 Landaulette on a 14 h.p. Bean chassis and a saloon Limousine with six seats on a 17·9 h.p. Renault.

Coachbuilders are tending to make more use of the new scratchproof cellulose compositions and safety glass. Most of the bigger saloons have four doors, and windows are almost invariably raised and lowered by cranks or other mechanical devices. V-fronts are holding their own, and larger windows are fitted at the backs of closed cars, a most necessary modification, as anyone will know who has ever tried to reverse a large covered car into a narrow garage.

The Large Cars.

Undoubtedly the chief joy of Olympia for the ordinary person is to examine closely, and perhaps to sit in, the huge expensive cars that he covets on the road but never hopes (and if he is wise never really desires) to possess. *Rolls-Royce* had their "New Phantom" with the improved engine and the six brakes system, *Daimlers* had their 35/120 sleeve valve, but the most interesting of all was the new *Bentley.*

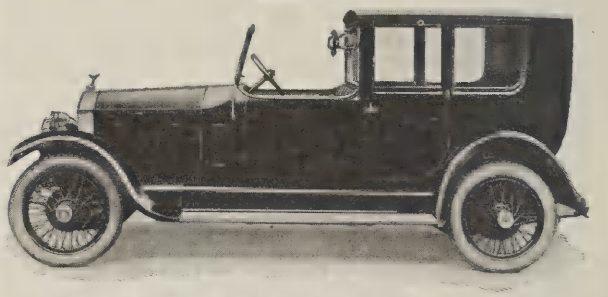
Bentleys are the only manufacturers that have ever stepped straight into the first rank with a new car, and since 1922 their name has become as familiar as that of Rolls-Royce. The car was the famous 3-litre 17·9 h.p. with 16 overhead valves, which would do 75 miles per hour with a saloon body and was incomparably finer than anything of its size in existence. They have now surpassed themselves with a new six-cylinder machine (Fig. 3) of 6½ litres, with 24 overhead valves, taxed as 38 h.p., but developing well over 100, which, if it maintains the standard of the earlier model, will be unique, as the life of the small Bentley is almost endless, and it is designed to need no attention. The most interesting feature of the big one is the camshaft drive, which consists not of gear wheels, but of two triple crankshafts connected by three pairs of stout tubes, which work in a large conical tunnel behind the engine. To counteract expansion was the chief problem, and it was solved by fitting spring bearings to the connecting rods at each end. The engine is mounted in front on a fabric pad and behind on two blocks of rubber, which insulate it from the frame; a new clutch design is fitted and the steering gear is redesigned to allow for the extra resistance of low-pressure tyres. It is a marvellous car.

Another of the most attractive large cars is the eight-cylinder Packard from America, a straight eight with the generator, starter, and carburetter all standing out from the clean run of the cylinder casting and extremely accessible. The engine, which is very long, is in the neighbourhood of 40 h.p. by our rating. Flint, Chandler, and Kissell are other large cars that represent the best of the American market.

Cars for the General Practitioner.

Now that makers are going in so much more for closed bodies, and that all cars are so reliable and easy to look after, the medical visitor will find that 85 per cent. of the cars shown would suit him perfectly. Even if he can only afford a maximum of £200 he can choose between a good dozen examples, such as Morris-Cowley, Jowett, Baby Austin, Briton, Citroën, Clyno, Peugeot, Chevrolet, and Trojan, and if he has £500 he can take his pick of half the show.

Fig. 2.

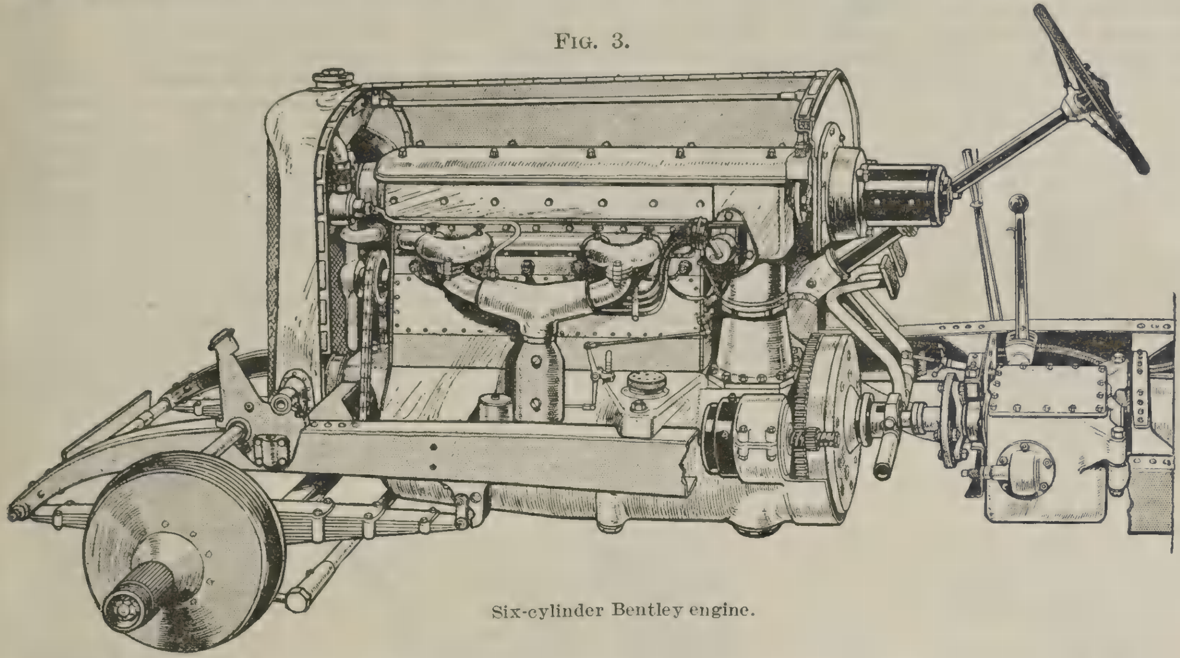


Six-seater Brougham Limousine by Windovers, Ltd.

Of orthodox two-seaters and saloons there is no end, and quite a number of makers still include the coupé in their standard range, but this wide two-seated body with its high bulwarks and solid folding top and carriage-windows, so suitable for the doctor who drives on winter nights, is showing signs of diminishing popularity. It is probably being ousted by the small saloon. There is one beautiful two-seater of a rather "sporting" type, however, with a semi-coupé top, that would be just the thing for a practitioner who wanted a car rather faster than usual but still suitable for everyday (and every night) practice. This is the *B.S.A.* 16 h.p. six-cylinder sports two-seater (Fig. 4). The body is cream-white, with red wings and mouldings, and the hood folds down and clamps to the raked wind-screen. There is ample room under the "quarter-deck" for spares and luggage and one passenger in the dickey. The engine is the 16 h.p. sleeve-valve Knight-Daimler, which is practically inaudible and extremely powerful. The car should do 65 miles per hour easily. Other bodies on this chassis are the open five-seater at £550 and two saloons at £550 and £600. It is really a cheaper Daimler, and so is extremely good.

Another of these small six-cylinder cars is the *A.C.* 16/40 h.p. This car is unique in that it has a 2-litre engine in a chassis only 2 cwt. heavier than their 4 cyl. 12 h.p., and so is exceptionally lively. One model that looked pre-eminently suited for a doctor is called the "Aceca" (Fig. 5) and costs £560. A disadvantage of the ordinary coupé is that it is very hard to see out of, and the Aceca body with the hood down is just like an ordinary very comfortable two-seater. The wind-screen is raked, however, with two triangular side-pieces, and the driver can pull the hood over and lock it to the top of the screen with the car on the move. When the windows in the doors are pulled up the protection is that of a coupé. This ingenious body is also fitted to the four-cylinder chassis at £495. There is a great variety of bodies to choose from between the cheapest A.C. at £300 and the racing four-seater at £800.

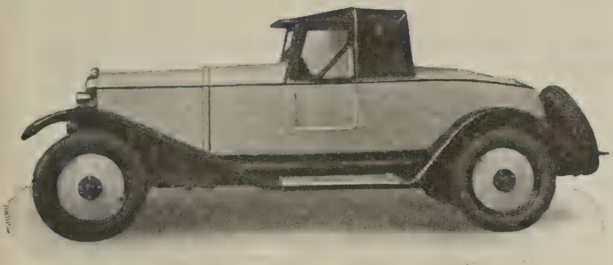
FIG. 3.



Six-cylinder Bentley engine.

The *Lancia* " Lambda " is the only foreign car for which there is no British equivalent. It is daringly unorthodox, being built very low down on a pressed steel frame with body and chassis in one piece, like a destroyer. The naval reminiscence is helped by the casing of the driving-shaft that runs the whole length of the seating-space, and in fact by all the low straight lines of the car, the lift of the scuttle, and her great liveliness. There are several improvements since last year. There are now four speeds, and the wheelbase has been lengthened on one chassis from 10 ft. 2 in. to 11 ft. 2⅝ in. The low seats are amazingly comfortable and the controls are exactly right. The makers claim 70 miles per hour for it. The shorter saloon costs £725 and the longer, with two extra folding seats, £800. Both saloons have a top which will come off and leave the car open for the summer. There are double Hartford shock absorbers on the back springs; in front are the Lancia vertical springs that contain their own dampers. The car is exceptionally light on fuel and tyres.

FIG. 4.



16 h.p. B.S.A. Sports two-seater.

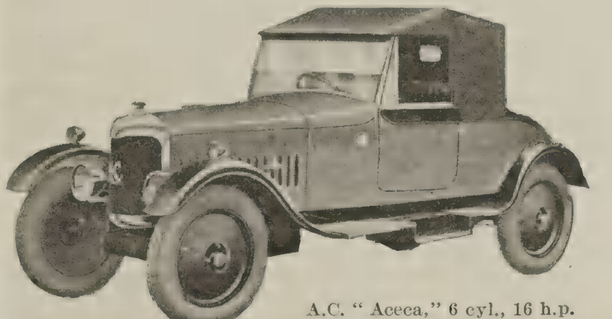
In the less ambitious class there are so many possibles that we are reduced to an invidious choice. One or two stand out slightly from the rest, and among them is the *Hampton* 12 h.p. coupé at £330, four-wheel brakes £345. It has a wide double dickey, a single-handed hood, and patent window lifts; the driving position and hand-brake lever are really comfortable. Screw-down bonnet clips of the kind that the Citroëns introduced into the country are a sign of the careful designer, and the dashboard has the now almost universal " cubby-hole " which was first started by the Standard makers.

A Scotch car that has fully proved its worth is the *Galloway* 12. The firm is a daughter of Arrol-Johnstone's, and fully sustains the parent's reputation. The engine has overhead valves of a new design that makes it exceptionally silent, and unlike most overhead valve engines it does not become noisy with use, which can be said of very few others. Four speeds are fitted, with right-hand change, and the speed and brake levers are well apart. Four-wheel brakes are £10 extra; the two-seater is £265 and the saloon £360.

The *Windsor* 10–15 coupé, by James Bartle and Co., Ltd., at £465, is another first-class car for the doctor. It has ample locker and luggage accommodation, a leather hood, and four-wheel brakes.

The *Essex* coach at £295 is remarkable value.

FIG. 5.



A.C. " Aceca," 6 cyl., 16 h.p.

Wolseley Motors, Ltd., have confined themselves this year to three models, an 11/22, a 16/35, and a 24/55. The small car is even better than the famous 10, but we miss the 14, which covered itself with glory in Major Forbes-Leith's drive to India. The 11/22 two-seater costs £235, with four-wheel brakes extra.

Low-priced Cars.

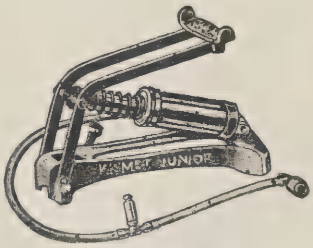
For the many who want a reliable car to get about in at the lowest possible price, Olympia caters better this year than it ever has before.

The Leyland *Trojan* 10 h.p. is very well known now, with its clean simple lines and its solid tyres and chain drive. The springing is literally better than that of any other car on the road, and the two-stroke engine very economical. The ordinary model at £125 represents the cheapest motoring there is, but the firm also sell a coupé with a detachable top, fitted with pneumatic tyres, at £158, that the country practitioner would find an ideal means of transport. There are no sliding gears, which will appeal to the beginner.

The *Peugeot* 7·12 is a remarkable little French car with a great name. The two-seater costs £150 and the smart weatherproof cabriolet £185. The makers have been daring enough to revert to the straight-through gear-change, which many drivers prefer to the gate. The car can be thoroughly recommended.

The *Morris-Cowley* 11·9 at £162 10*s.* has Gabriel shock-dampers, spring gaiters, a grease-gun system, electric lighting and starting, a dashboard light, and a radiator thermometer, and for £180 front-wheel brakes. It is unquestionably the best-equipped car of its price on the road, and is certainly one of the sweetest to drive. Its only disadvantages are that its brakes are nearly always noisy and the hand-brake lever is too short. The Morris-Oxfords are rather larger, and are very fine cars indeed; they cost from £90 to £130 more.

FIG. 6.



The Kismet patent foot pump.

ACCESSORIES.

A tour of the galleries this year, though very instructive, showed hardly anything new, but that is largely because everything that a motor-owner could conceivably require, and plenty that he could not, is already obtainable. The owner-driver is not as a rule very interested in paint, preferring to leave such a difficult subject to the coachbuilder, but *Robbialac* is always a standby to him, as it requires very little knowledge to apply and dries quickly and well. It is a most useful enamel for covering up odd scratches and dents in mudguards. The *Carmaloid* firm exhibited their now well-known celluloid enamel, which is being increasingly used by the makers of bodies. It is non-inflammable when dry and very elastic and tough; its polish improves with wear. It has also the great advantage of drying in a single hour at 70° F.

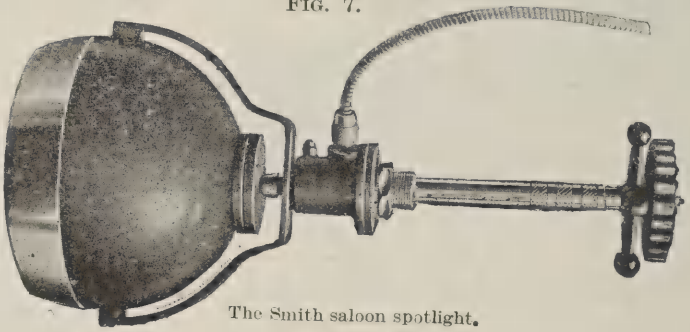
Tyres, Jacks, Pumps, Shock-absorbers.

The "balloon" tyre increases in popularity, which is not surprising, for it enormously adds to the comfort of any car, besides improving its appearance. Most tyre makers now market a full range of low-pressure and medium-pressure tyres, especially *Dunlop* and *Michelin*, whose products are better and more widely used than ever. The owner of a car with these tyres, however, must be very careful indeed to keep his pressure up to the figure recommended by the maker, since if they are under-inflated they are liable to roll off the rims when taking a bend at speed, which may cause a very serious accident. He can completely insure himself against mishaps of this kind for 6*s.* 10*d.*, and a little care, by purchasing the Schrader gauge. It is a small nickel tube about the size of the little finger, which with its adaptor will fit any valve. When it is pressed against the opening a black graduated plunger shoots out from which the pressure is read. To possess it is to save ten times its cost every year at least.

The buyer of a car with low-pressure tyres should make sure that his jack will lift the car the extra two inches or so when the tyre is flat. If it will not he should throw it away and buy the *Dunlop* "Double-Lift" jack, which besides being extremely well made is only 6 in. high when closed. The central pillar consists of a threaded bar within a tube threaded inside and out, which gives a quicker lift than the simple type. The gearing is completely enclosed and the top swivels; the base is broad enough to stand firmly on any surface.

It will save the doctor a great deal of valuable time to make sure he has a good pump. Most men hate the strenuous work of inflating tyres with the ordinary push-and-pull type, and there are several extremely good foot-operated pumps in the show. The two best, which are of similar design, are made one by Dunlops and the other by William Turner and Bro., Ltd., of Sheffield. The latter is called the *Kismet-Duplex* (Fig. 6), and costs 58*s.* 6*d.* in its box. There is a smaller model at 40*s.* A high-pressure cylinder works inside a low-pressure one; air is passing into the tyre all the time, and the work, besides being easy, is cut extremely short, since the pressure is increased about 1½ lb. by each stroke. The valve connexion is of a "universal" push-on type (which, by the way, should be on all pumps. Many designs are marketed by different firms, and cost 2*s.* or 3*s.*).

FIG. 7.



The Smith saloon spotlight.

Shock Absorbers.

The great elasticity of balloon tyres causes an uncomfortable bounce unless the recoil of the spring is damped by some form of shock absorber. There are many good makes, but of these the most generally used are the *Gabriel Snubber* representing the counter-spring principle, and the *Hartford* representing the friction principle. The Gabriel, shown by *Brown Bros.*, consists of a coiled spring in a box on the frame, attached to the axle by a strip of stout webbing. It is extremely efficient, and is fitted to all Morris and Buick cars.

The Hartford, of *T. B. Andre and Co., Ltd.*, London, is so widely known that it hardly needs description. It is shaped like the hind leg of a grasshopper; one arm is bolted to the frame and the other to the axle. Double models are made for racing cars, of which hardly one exists without them. The damping effect is finely adjustable. This fitting makes all the difference to the comfort of a touring car, and adds at least 20 miles per hour to the maximum speed of a racer. For smaller cars it costs between 12 and 15 guineas to fit.

In these days of spare wheels and cord tyres a driver does not often need to mend a tube on the road, but it may easily happen to a country practitioner that he has left a wheel at a garage to be mended and then punctures or bursts one of the others. The only alternative to abandoning the car is to carry a box of *Patchquicks*, which are stout patches that are applied with a special solution called " Fix," like patches on a bicycle tyre. The presence on the car of a box of these patches may save the loss of a half-day's work or more. Always carry valve spares on the car.

Tyre Insurance.

The Lancashire and General Assurance Co., Ltd., 8, Bucklersbury, London, E.C., have a scheme of tyre insurance that will be welcome to many motorists. They insure against bursts at a rate of 6*d.* per £ value. Coupons are sent on application. The scheme applies only to British-made tyres, which must not have run more than a week.

The *Parson's Non-Skid Co.*, in addition to their unique chains which are the only counter to thick mud or snow, showed a neat " Twinbar " bumper at £3 5*s.*, for front or back.

The Industrial Rubber Products make neat india-rubber grips for the steering-wheel at 6*s.* 6*d.*, and *Moseley* a pneumatic driving-cushion, the " Float-on-Air," in all sizes, from 47*s.* 6*d.*

Lights.

C. A. V., *Lucas*, *Rotax*, and all the well-known makers were well represented.

The *Marvulc Accessories Co.* showed a very useful dimmer switch called the " Courtesy," which has the following advantages. It is indestructible and will not burn out, can be used on any system, will give any degree of dimming or switch off entirely, and can be fitted in any position on the car. It costs 15*s.* 6*d.*, and is most convenient on a spoke of the steering-wheel.

S. Smith and Sons, of Great Portland-street, showed among their great range of accessories two very useful lighting devices. The *Saloon Spotlight* (Fig. 7) fits through the wind-screen pillar and is directed without lowering the window by turning a milled knob that projects inside the car and revolves a small friction disc one side of which makes contact with the body of the lamp.

The *Smith Safety Signal Mirror* has a transparent two-ended arrow in the glass. By moving a switch on the dashboard either end will glow red, according to the direction in which the driver intends to turn. Pressure on the foot-brake signals " stop " or " slow " by lighting both heads of the arrow.

Horns.

Alfred Graham and Co., who have fitted our warships for years with loud-speaking telephones, have marketed a new electric horn called the " Sparton S.O.S." The note, although not offensive, is high-pitched and arresting, and extremely loud—the kind of horn that wants a dimming-switch for town.

Klaxon, Ltd., in addition to their large and well-known range of alarm devices, sell a model with two notes, for use either in town or country.

A fitting that should be on every steering-wheel is the *Eural* horn ring. It happens continually that a driver wishes to sound the horn, steer, and pull his brake on at the same time, and no simple switch will allow him to do all three. The Eural ring is attached to the spokes of the wheel, and pressure on any part of it sounds the horn; there is no position of the steering hand that puts it out of reach. It is made in five different diameters, and costs from 21*s.* to 35*s.*

Petrol and Oil.

All the leading makers occupied stands gaily decorated with illuminated petrol-supply pumps and coloured cans, and exhibited samples of their fuel and lubricants. There is hardly any bad petrol to be had, but car-owners should be careful to buy only oil with a thoroughly reputable name, such as Castrol (Wakefield's), Shell, Price's, &c. The British Petroleum Co. are the only purely British suppliers of motor fuel. They are the selling end of the Anglo-Persian Oil Company, which has vast wells in Persia and Iraq.

Ignition.

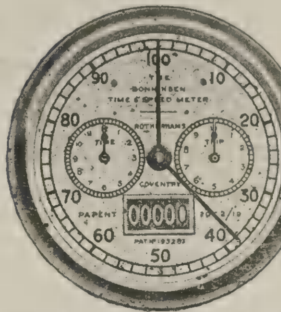
Lodge have a very complete range of plugs, and Smith and Son handle the well-known *K.L.G.*, which was designed originally by the famous racing driver, Kenelm Lee Guinness, and has proved its worth in many races. Both makes are thoroughly reliable.

Simms Motor Units showed several magnetos in action, particularly a slow-speed model which gives an especially hot spark for starting.

Speedometers.

Now that every car is sold with a speed indicator thrown in, owners are probably less interested than they were in descriptions of individual types. There is one so outstandingly good, however, that it would be worth anybody's while to demand it and pay the difference. It is the new Bonniksen Time-Speedmeter (Fig. 8), at £8, from Rotherhams', of Coventry. The Bonniksen speedometer has been known for many years, of course, but the new model is considerably improved. In addition to the two " walking hands," one of which is always steady at the speed to be indicated, there are two small dials, one identical with a clock face and the other like it, but divided into 10 " hours " instead of 12. The first tells the time of actual running and is set by the watch at starting, the second the distance covered in miles. The driver can therefore calculate his exact average speed and know how long he lost in stops. To the careful business-like driver it will appeal irresistibly.

FIG. 8.



Bonniksen time and speed meter.

Miscellaneous.

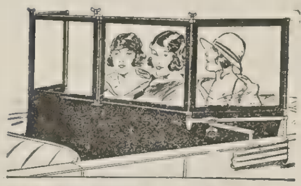
Ferodo, Ltd., are well known for their clutch and brake linings, and the driver who is determined to make his car as comfortable as he can will be interested in the application of their fabric to the leaves of springs. Besides prolonging the life of the springs it damps out the rebound without spoiling the resiliency. It is known as " Ferodo Spring Interleaving."

Among the various devices for preventing thieves from driving a car off are the *Connaught* petrol tap, which can only be turned on by a special key (*Jenks*, 54, Ebury-street, S.W.), and an ingenious electrical lock called the *Owl*, by *E. T. Riches and Co., Ltd.*, 19, Store-street, W.C. It replaces the ignition switch, and is a small round dial, fitted with a revolving ring on which is an inside pointer. The dial itself is marked like the face of a clock, and the mechanism is set at a particular " starting-time " known only to the driver. The engine can only be started if the pointer indicates this time, and any illicit attempt turns on the electric horn. The makers are so confident of its infallibility that they include a free insurance of £25 against theft, and suggest that its mere presence would deter the would-be thief. The American device of a large scarlet wedge, to lock on to the tyre, seems not to have penetrated Olympia yet.

The *Boyce* radiator thermometer, among other reliable makes, is indispensable to a sympathetic driver. In winter engines are driven too cold as often as too hot, and in conjunction with a radiator-jacket by any good accessory maker this fitting will enable him to maintain the best running temperature. It is also extremely ornamental, as a glance at any Morris-Cowley or Buick will show. The temperature of the water is shown by the height of a red column in a circular glass dial with a nickel frame, like a watch. Similar in appearance is the " Telegauge " petrol indicator, by Picard's, which is designed for tanks filled from the scuttle, and shows the contents in gallons.

The "Easting" rear wind-screen (Fig. 9) maintains its popularity. These cleverly designed screens make all the difference to the comfort of passengers in the back of a touring car, and many makers fit them as standard. The type illustrated is a four-panel screen with four-point suspension. The panels are of highly polished transparent celluloid on tubular steel frames covered with leatherette, and beneath them are large waterproof aprons that completely protect the passengers. The two centre panels hinge back as doors on the outside ones, and the screen can be locked rigid in any desired position. It completely fulfils the cardinal requirements of protection, convenience of entrance and exit, and clearness of vision.

FIG. 9.



The Easting rear wind-screen.

The thought suggested most forcibly by this year's Olympia is that the vast car-less public is going to be substantially reduced between now and next midsummer. What the roads will be like does not bear thinking, but it is much more important that a few more thousand Englishmen will have their lives enriched by the adventure of owning and learning to manage a car of their own, and will enter into the possession of our English roads and the country they open up, than which there are few more valuable possessions.

INFECTIOUS DISEASE IN ENGLAND AND WALES DURING THE WEEK ENDED OCT. 3RD, 1925.

Notifications.—The following cases of infectious disease were notified during the week: Small-pox, 28; scarlet fever, 2217; diphtheria, 1002; enteric fever, 61; pneumonia, 738; puerperal fever, 59; cerebro-spinal fever, 4; acute poliomyelitis, 15; acute polio-encephalitis, 1; encephalitis lethargica, 43; dysentery, 9; ophthalmia neonatorum, 101. There were no cases of cholera, plague, or typhus notified during the week.

Deaths.—In the aggregate of great towns, including London, there were 4 deaths from enteric fever, 23 from measles, 12 from scarlet fever, 28 from whooping-cough, 51 from influenza, and 23 from diphtheria. There were 126 deaths of children under 2 years from diarrhœa and enteritis, as compared with 173, 220, 219, and 230 in the preceding weeks. In London itself the deaths from diarrhœa and enteritis in children under 2 years numbered 34, as compared with 46, 55, 43, and 38 in the preceding weeks; there were 7 deaths from diphtheria, 3 from whooping-cough, and 9 from influenza.

MEDICAL GOLFING SOCIETY.—The annual autumn meeting of this society was held on Oct. 10th and 11th at Deal by permission of the Royal Cinque Ports Club. The course was in excellent condition. The results of the competitions were: Singles *v.* Bogey: L. W. Bathurst, 3 up; 2nd prize, W. H. Lamplough, after a tie with L. Barrington-Ward. Foursomes *v.* Bogey: G. Norman and H. Wolseley-Lewis, 2 down. Canny Ryall Challenge Cup: H. Apperly after a tie with A. H. Vassie at 75; 2nd prize, Mather Thomson, 76; 3rd prize, N. Fleming and H. Gardiner-Hill, 77.

MEDICAL SICKNESS, ANNUITY AND LIFE ASSURANCE SOCIETY, LIMITED.—The annual meeting of this society was held at the offices of the Company, 300, High Holborn, London, W.C., on Oct. 12th. The Chairman, Dr. F. J. Allan, in his annual address, congratulated the members on the satisfactory report on the work of the society during the past year. He called attention to the fact that, though there was a steady increase in the business, the ratio of expenses had fallen by nearly 2 per cent. as compared with the previous year. Dr. Allan gave a brief history of the society since its foundation in 1883, and in referring to the various policies issued, said that the society was converted into a limited company on a mutual basis in 1920, as hitherto it had suffered from the restriction under the Friendly Societies Act, which limited the amount for life insurance to £300. Since the alteration over £500,000 of new business had been transacted in that branch. Dr. F. C. Martley and Sir William Willcox were re-elected to the board of directors, and Messrs. Harber, Sturges, and Fraser were re-elected auditors.

Correspondence.

"Audi alteram partem."

THE UNIVERSITY OF LEEDS: THE MEDICAL FACULTY.

To the Editor of THE LANCET.

SIR,—The old Leeds Medical School is approaching its century of existence in which a steady progress of development has been marked from time to time by substantial additions to its accommodation. Since 1893, the date of completion of the present buildings, there have been no structural alterations commensurate with the progress of physiology and pathology, the closer coöperation of laboratory and clinical departments, and the increase of the general and special hospitals and the public health organisations, which all add to the obligations and opportunities of service of the Medical School.

The support given by the medical profession to the school in times past was both generous and important. The example of former days is our justification, at this critical time of need for expansion, for making a special appeal on behalf of the school.

The University is fully aware of the value of the Leeds Medical School, and desires very earnestly to promote the usefulness of this faculty with no less care and energy than it devotes to the development of the faculties of arts, science, and technology. For this reason the urgent needs of the Faculty of Medicine have been acknowledged by the University; and in making its general appeal to Yorkshire it feels that the greatest assistance may be derived from the spirit of the profession which by its own endeavours raised a medical school from casual meetings in the back room of the old dispensary to a position of respect and eminence in the medical world.

At the present time there is neither accommodation nor equipment to permit the University to set men on to meet the demands for investigation and service required by the community. Even the present staff, honorary and otherwise, are prevented from giving their energies and enthusiasm to current problems by this lack of facilities. It is earnestly hoped that the members of the profession will give all the assistance in their power towards the object of the University which is to make its medical departments capable of acting as a fruitful and useful centre of research and information and equal to their obligations to our large industrial population.

We are, Sir, yours faithfully,

DEVONSHIRE,
Chancellor.

J. KAY JAMIESON,
Dean of the Faculty of Medicine.

The University, Leeds,
October, 1925.

OCCUPATIONAL THERAPY.

To the Editor of THE LANCET.

SIR,—A movement is now actively on foot for the promotion and coördination of all forms of curative handwork in this country. In July last Mr. Thomas Kidner, President of the American Therapy Association, was entertained at the Lyceum Club by men and women in the medical and educational world, when he gave an account of the growth and results of the work of that Association during the six years of its existence. The hope was expressed that an association on somewhat similar lines might be started in this country. Mr. Kidner's report was followed by comments from Sir Robert Jones, Dr. E. Mapother, Dr. Porter Phillips, and Dr. Crichton Miller, which made it clear that while much was being done in this country for tuberculous cases, the psychical side of the work was as yet sadly undeveloped, owing rather to lack of funds and trained workers than to any failure to realise the value of handwork as a means of cure.

As a direct outcome of this meeting, representatives of interested bodies met at 122, Harley-street, London, in September, when Dr. Jane Walker explained the object of the meeting as an effort to ascertain the possibility of forming an association to stimulate and advance the work in this country, by promoting coöperation in already existing work, gathering suggestions and ideas from all sources and disseminating them for the common good, and by aiding in the training and supply of suitable workers. It should be borne in mind, said Dr. Walker, that occupational therapy was of three kinds: *Diversional* therapy, when the patient was not fit for more than simple games or amusements to divert the mind. Or, if further on the road to recovery, the *occupational* type of work could consist in making useful and artistic things, not only for the purpose of occupying the mind, but for the restoration of impaired or weakened function. Thirdly, and this would refer primarily to non-mental cases, the work could be *vocational*, in the attempt to place the patient in a better position to earn his living when restored to health. From the ensuing discussion it became clear that the position in regard to mental patients was held to be quite different from that of the tuberculous. In regard to orthopædic work, Mr. R. C. Elmslie regarded it as impossible to separate the occupational from the vocational. Dr. J. E. Chapman emphasised the distinction between the two. Lieut.-Colonel J. R. Lord's experience of mental cases showed the work had to be undertaken from an entirely curative and non-vocational point of view. Others who contributed to the discussion were Dr. N. D. Bardswell, Mrs. Kimmins (Heritage Craft Schools), Miss L. Nevile (Essex County Association), Miss Evelyn Fox (Central Association for Mental Welfare), and, on the subject of the training of workers, Mrs. Francis Lewis and Miss Munckton.

Three points emerged from this discussion: (1) No doubt exists as to the value, and, indeed, necessity, of handwork as a means of physical and mental cure in cases where recovery is slow and tedious. (2) Both in practice and result, occupational therapy differs widely in the two forms of illness, mental and physical. (3) The need for trained workers is urgent.

Finally, it was proposed by Dr. W. A. Brend (Ministry of Pensions) and carried unanimously that an association be formed, and a provisional committee to consider finance and organisation was appointed as follows: Dr. Jane Walker, Dr. Brend, Mr. William Wilson, D.Sc. (Inspector of Workshops, Ministry of Pensions), Mrs. Townsend (Cripples' Care Committee), Miss Nevile, Miss Fox, with Miss M. Gribble as acting secretary.

As one of the chief aims of this newly-formed Association will be to promote coöperation in existing work and to further new enterprise, it will be of the greatest assistance to the executive committee if heads of institutions or other interested workers would offer suggestions as to the way in which such an association would serve them best in their particular branch of work, and would furnish further details as to what they have been able to accomplish already.

I am, Sir, yours faithfully,

M. GRIBBLE,

Secretary, "Occupational Therapy,"
122, Harley-street, W. 1.

Oct. 7th, 1925.

WHAT CONSTITUTES A CURE IN PSYCHOTHERAPY?

To the Editor of THE LANCET.

SIR,—I read with interest the annotation on this subject in your issue of Oct. 3rd. Personal and subjective factors are of more account in the psychoneuroses and in functional disorders generally than in any other department of medicine. Classification, diagnosis, treatment, and standard of cure are therefore inevitably less cut-and-dried, and statistics are apt to be varied and unreliable. We remove a tumour, and set it up in a bottle of spirit for all the world to see; we remove an obsessive fear which its owner has hidden from all the world but ourselves—and where can we preserve it as evidence? The faulty adaptation to life which is the essence of a psychoneurotic state may be wholly internal, hence the unsupported statement of such a patient as to his illness, improvement, or cure, while not the final word on the matter must be given much more weight than in the case of a sufferer from gross organic disease. A cure can only consist in the patient being enabled to reach a stable adjustment to life, and can only be proved by the harmony and efficiency of his reactions to it and by his freedom from his former mental or physical symptoms.

It must also be remembered that certain persons, capable of leading highly useful and successful lives, suffer from what we can at present only call a constitutional nervous instability, which, from the practical point of view, is in many cases incapable of being influenced by psychotherapy or any other treatment. But just as we may "cure" a case of bronchitis without altering an underlying emphysema, or may, for an indefinite period, relieve dyspnœa and palpitation without affecting a damaged cardiac valve, so we may—and should—do much by psychotherapy to relieve neurotic symptoms even in cases where we may be unable to touch the basic causal factors. In other words, the existence of "chronics" is just as inevitable in psychological work as in ordinary medicine, their frequency no greater, their "cure" just as impossible, and their need for help just as urgent.

It is thus pertinent to ask, What constitutes a *failure* in psychotherapy, for it is certain that much scepticism and distrust are due to the fact that psychotherapy is asked for, and too often attempted, in cases where a total or partial "failure" is a foregone conclusion owing to the nature of the case or its attendant circumstances.

I have not happened to notice any published statistics of individual psychotherapeutic work, so, for what they are worth, I have investigated my own records. I am not in a position to say whether my results are good, bad, or merely absurd. I have taken 100 consecutive cases which have been referred to me for psychotherapeutic treatment, or at least for an opinion as to its advisability, omitting only those which are still under treatment, and a few obviously unsuitable cases, usually of manifest insanity, which have been brought to me without, or against, the advice of their physician. They cover a wide field, from enuresis and simple insomnia to complicated obsessional and anxiety states. I try to believe that I adapt my methods to individual cases. Some have worked out on typical Freudian lines, with others a more constructive kind of mental analysis has proved useful, some have been treated by explanation and discussion, one or two by hypnotic suggestion, due regard being had to the presence in any case of toxic or endocrine factors.

Of the 100 cases under review 16 were more or less promptly declined as unsuitable, without any attempt to institute treatment. The majority were cases of early melancholia or dementia præcox, three showed the mental sequelæ of lethargic encephalitis, two suffered from organic nervous disease. In this branch of medicine, above all others, rapid diagnosis is dangerous and often impossible, and in nine cases I began treatment in a more or less tentative way, but after a period varying from one to six weeks I decided, usually in spite of the patient's wish, to give it up, as it had become apparent that such treatment as I could give would do no real good. Some of these proved to be definitely psychotic, in some of them physical treatment appeared to be the first requirement, in others difficulties connected with their employment, or their domestic relationships were insuperable. It should be said that some at least of these 25 rejected cases could probably have been dealt with successfully in a suitable institution or nursing home had circumstances permitted. I have not included in this series some which I myself sent to such places.

Eight patients whom I would have continued to treat stopped attending, either owing to family opposition or because the demands which treatment made upon their time, pride, courage, honesty, or purse were more than they were prepared to face.

Of the remaining 67 cases treated to a conclusion, I classify 22 as "cured." By that I mean that all symptoms have disappeared, the patients are efficient and happy in their ordinary activities, and, if life treats them with reasonable kindness, I see no grounds for anticipating any relapse.

Twenty I describe as "much improved." (Ten of these state that they are perfectly well, but while encouraging them in that belief, I am not yet myself sufficiently confident as to their stability to include them in the "cured" class.) They have lost most, if not all, of their symptoms, and are getting on with their daily work very comfortably, able to deal fairly adequately with any difficulties which arise.

Seventeen are "improved." They are relieved of their more urgent symptoms, and are carrying on, though not without some difficulty at times. Psychological readjustment is apt to be a slowly progressive matter, and some of them will, I expect achieve it more fully by degrees. Others will probably require further assistance sooner or later.

The remaining eight are complete failures. That is to say, they are cases which, in my opinion, psychotherapy ought to have been able to help more or less, but which have shown no improvement. Apart from lack of skill on my part, the chief reasons for failure appear to be unusual depth and complexity in the psychological maladjustment, and the presence of persistently unfavourable external circumstances.

The obvious criticism of these figures from the statistical point of view is that each case is classified in an arbitrary manner, and largely on subjective grounds, by the unconfirmed testimony of two biased parties, the patient and myself. I grant this unfortunate and unavoidable fact at once, but until the emotional vagaries of the hysteric and the compulsions of the obsessionist can be made as definite and objective as microscopic specimens and death certificates, I do not see how statisticians can ever be given the precise and clean-cut figures and percentages regarding the results of psychotherapeutic work which they quite rightly demand in other departments.

I am, Sir, yours faithfully,

Glasgow, Oct. 12th, 1925. D. Yellowlees.

LUMINAL OR BORAX IN EPILEPSY.

To the Editor of The Lancet.

Sir,—Those who deal with a large number of cases of epilepsy of all the described types, from minor epilepsy and pyknolepsy to affect epilepsy, know that it is not uncommon in adults to find remission from attacks for a few months with almost any of the advised remedies. My chief objections to luminal are: 1. It easily tends to become toxic, of which the symptoms are drowsiness, vertigo, disturbances of coördination and speech, rashes and œdema, and, occasionally, restlessness and excitability. 2. While in most cases which have never previously been given it, attacks are lessened and sometimes cease for a few months, in the vast majority of these cases it rapidly loses its effect and after a few months becomes ineffective.

In my own experience, sodium biborate (borax) is the most valuable therapeutic agent we have for epilepsy if it is properly applied. Since 1920 I have been using it as a routine treatment in every variety of epilepsy, in nearly 100 cases, and even where it does not absolutely cure it greatly reduces the number of attacks. The great objection is that children do not as a rule respond so well as adults. Its whole value lies in the method in which it is given. I start the patient (if an adult) on sodium biborate, gr. 10, thrice daily, with 10 or 15 gr. of sodium bromide. Sometimes I add 2 or 3 minims of liquor arsenicalis, but I am doubtful of the necessity of arsenic. The main combination is bromide and biborate. If the patient does well on this, I leave it. If the fits do not cease in a fortnight (the standard I adopt during treatment is total cessation of fits, not mere diminution in number, except in pyknolepsy), I first of all increase the sodium biborate to 15 gr. thrice daily. If the fits do not cease totally in another fortnight with this I next increase the bromide to 15 gr.—i.e., 15 gr. each of sodium biborate and sodium bromide. I leave it at that for a month or six weeks, and if there are still fits I give them 15 minims of belladonna once daily, either morning or evening, depending on whether the fits are diurnal or nocturnal, in addition to the 15 gr. each of bromide and biborate three times a day.

This combination almost invariably, in my experience, achieves a cessation of fits in adults. Once I get to the optimum drug combination I leave the patient on that for about two months if belladonna has been used, then I diminish the belladonna first, so that after a further month the patient is not taking belladonna. The biborate and bromide I leave undisturbed for at least a year, then if there are still no fits I gradually diminish the bromide, taking some months till the bromide has disappeared altogether. The patient then remains on what is his optimum dose of biborate (10 or 15 gr.), and is kept for another year, even without fits, on sodium biborate and water.

The following cases shown at a recent clinical lecture will serve as illustration.

Mrs. A. B., aged 45. I first saw her on Nov. 10th, 1921. She had had her first fit three years before that and had been under continuous medical treatment. Her fits were now getting more frequent and when first seen she was getting two to three every week. She had no aura. She had incontinence of urine sometimes, bit her tongue, injured herself sometimes, and was always mentally confused afterwards. She was put on sodium biborate gr. 10, ammonium bromide gr. 15, liquor arsenici hydrochlorici minims 3. In the course of the first 12 months under treatment she had only three slight attacks, and her last fit (a mild one) was on Dec. 8th, 1922. The bromide was finally taken out of her mixture on March 1st, 1923, when she was put on a mixture of sodium biborate, gr. 10 and water, three times a day. This was continued till April, 1924, when all medicine was stopped. Since then she has had an attack of pleurisy and one of influenza, but she has had no more fits.

Miss C. D., aged 27, "dull mentally" since birth, and can neither read nor write. She had fits of major epilepsy for several years before coming under my care in January, 1922. They were increasing and she was then having sometimes three in a week. She was put on 10 gr. each of sodium biborate and ammonium bromide thrice daily. Her last attack of major epilepsy was in April, 1922, but she has had what her mother calls "spasms," probably myoclonus epilepsy. She had one of these "spasms" on an average of one every two months, but has not had even a "spasm" since September, 1924. She is still on 10 gr. each of bromide and biborate.

Mr. E. F., aged 26. He has had fits since the age of 11. He has no aura; incontinence of urine sometimes; bites his tongue, injures himself, and is "stupid" for about ten minutes afterwards. His fits averaged one a month, and he had been under treatment at various hospitals for many years. His last fit was on April 7th, 1924. He came under my notice on April 16th, 1924, and I put him on sodium biborate gr. 10, sodium bromide gr. 15, thrice daily. He has not had a fit since he has been under treatment. He is now on 10 gr. of biborate and 5 gr. of bromide. In another month he will be on biborate alone. His general health has improved and he feels well. His heart exhibits premature contractions at irregular intervals, 1 in 4 or 5, to 1 in about 50 beats, but he has no dyspnœa or palpitation.

On the whole I find that patients bear sodium biborate well, and I have yet to find one suffering to any extent from indigestion due to it. The only toxic effect I have noted is that the heart frequently exhibits premature contractions, which can be ignored, as the patients do not suffer either from dyspnœa or palpitation.

I am, Sir, yours faithfully,

Philip Figdor, M.B.,
Assistant Physician, London Temperance Hospital, &c.

Oct. 7th, 1925.

LUMINAL IN EPILEPSY.

To the Editor of The Lancet.

Sir,—I have before me the case-records of 89 epileptics treated during the last two and a half years at the Birmingham and Midland Hospital for Nervous Diseases. Careful records of progress and treatment are kept in all cases of epilepsy at this hospital, so that the case-sheets constitute a valuable guide to the merits of different forms of treatment. Of the 89 cases, 40 per cent. attended at fortnightly intervals for over 12 months, another 45 per cent. for over six months, and the rest for short periods only.

From a study of these cases four facts seem to emerge: (1) That luminal is more effective than bromide in controlling the seizures in idiopathic epilepsy; (2) that the effect of luminal is considerably enhanced by the addition of a small dose of bromide; (3) that the mentality of the patient improves under luminal, as compared with bromide; and (4) that although the period of improvement under luminal is longer than under bromide, tolerance seems eventually to be established and fits recur.

As to dosage, I do not believe that more than 3 gr. of luminal daily should be given in epilepsy. In only five cases of this series was this dose exceeded, 1½ gr. having been given three times a day, and in every case signs of intoxication appeared—that is, thick speech, ataxia, hilarity, and a subjective sensation of "silly-headedness." In no case were skin rashes noted. I do not believe that luminal can ever replace bromide entirely, but I think its great utility is to enable us to so reduce the dose of bromide that the characteristic bromide depression does not occur. Also, since it is given in tabloid form it is so much more convenient to take. I have omitted special features, such as family history, the presence of disease in other systems, reflex sources of irritation, and, what is still more important, the time which has elapsed between the onset of fits and the institution of treatment, but all these have been taken into account in deciding the merit of luminal as compared with bromide.

Dr. O. G. Misquith quotes two cases from his practice in which luminal completely checked the fits and restored the patients to a "normal existence." I, too, have had such cases, in which it appeared to act like magic, cases in which bromides had seemed actually to aggravate the trouble. I remember one such case in a tram conductor, who had lost his employment on account of fits, and who, when he consulted me, was having 5 to 10 seizures a week. Luminal in his case completely checked the fits, and for months he would bounce into my consulting-room at the hospital, and literally sing his praises from a new-found vitality and joy in life. Alas, this lasted exactly 12 months, and then the fits began to recur, and try as I might by readjustment of dosage, I could not again control him with luminal. I could quote many similar cases.

Cases in which fits begin between the ages of 14 and 20 seem by our statistics to be the easiest to control, and I am a firm believer in bringing all recent cases of epilepsy under a preliminary in-patient observation and treatment before beginning out-patient attendance. Some remarkable facts in this connexion are brought to light by a study of this series of cases.

I am, Sir, yours faithfully,
A. Williams-Walker, M.D., M.R.C.P.,
Physician to Out-patients, Birmingham and Midland Hospital for Nervous Diseases (associated with Queen's Hospital, Birmingham).
Oct. 10th, 1925.

STICKING-PLASTER DERMATITIS.

To the Editor of The Lancet.

Sir,—The annotation on this subject in your issue of Oct. 10th is important. It is to be hoped that Dr. H. W. Siemens has isolated the injurious ingredient. If it can be omitted from the plaster he will have conferred a great boon on countless patients. Recently I was conducting a number of experiments on the skin of my arms and of some colleagues; the ordinary brown hospital plaster was used to retain the applications in position. Invariably, a day or two later, the parts touched by the plaster broke out in discrete follicular pustules. These confused and vitiated any conclusions one might draw from the effects of the materials we were testing. The use of plaster necessarily had to be discontinued.[1] There did not appear to be any sensitising effect from the plaster. All the experimenters seemed equally liable. The eruptions were strictly localised, and the strength and severity of the inflammation produced apparently varied with the length of application.

I am, Sir, yours faithfully,
Wigan, Oct. 12th, 1925. R. Prosser White.

Obituary.

ARTHUR GORDON JENNER, M.R.C.S. Eng., D.P.H. Liverp.

Dr. A. G. Jenner, medical officer of health for the Borough of Stockport, who died on Oct. 5th at the age of 40, studied medicine at the University of Liverpool, qualifying in 1907, and in 1911 he obtained the Liverpool Diploma of Public Health. He held successively the posts of house surgeon and senior house physician at the Royal Southern Hospital, Liverpool, and was then appointed resident medical officer at the West Derby Union Infirmary, Liverpool. For two years he was resident medical officer at the Liverpool Corporation Park Hill Fever Hospital, and in 1912 was appointed assistant medical officer of Burton-on-Trent. Just before the outbreak of the war he went to Stockport as tuberculosis officer, and was appointed deputy medical officer in the early part of 1915. For two years he had charge of the public health in Stockport, and in 1917 joined the Army, where, until 1919, he served with the rank of captain on the administrative staff of the Salonika Army in charge of the 98th and 131st Sanitary Sections. On his return to Stockport he was reappointed deputy M.O.H. in October, 1920. He succeeded the late Dr. H. E. Corbin as medical officer of health for Stockport in 1922. Dr. Jenner was a member of the Board of Directors of the Stockport County Football Club, and was himself an enthusiastic footballer, having been a Rugby player. He was a most efficient and painstaking medical officer, and he was particularly interested in child welfare. A man of pleasing and attractive personality, his early death is deeply regretted by the whole community of Stockport. He leaves a widow and two children.

PERCY ROBERT COOPER, M.D., B.Sc. (Hons.) Lond., F.R.C.S. Eng.

Dr. P. R. Cooper, honorary consulting surgeon to the Altrincham General Hospital, died on Oct. 10th as the result of septic poisoning contracted in the course of his professional duties. He received his medical training at the University of Manchester and at St. Bartholomew's Hospital, London, graduating M.B., Ch.B. Vict. in 1893 and obtaining the M.R.C.S. Eng. and L.R.C.P. Lond. in the same year. In 1890 he gained the B.Sc. of London University with honours, and in 1895 he became a Fellow of the Royal College of Surgeons of England. The following year he obtained the M.B. Lond. with first-class honours, and in 1901 became M.D. Lond. With a strong leaning towards natural history, he was for a time assistant demonstrator in zoology and pathology at Owens College, Manchester, and after some experience as a house surgeon in the Manchester Royal Infirmary he took up practice in Altrincham, where in due course he became one of the best-known and busiest practitioners in North Cheshire. Two years ago he was appointed honorary surgeon to the Altrincham General Hospital. Dr. Cooper was an enthusiastic member of the medical and pathological societies of Manchester, and at one time acted as President of the Manchester Clinical Society. He was a great reader of medical books and occasionally contributed a well-considered note on some clinical problem to a medical journal. The joint library of the Manchester Medical Society and the University Medical School owed much to his interest and coöperation. Altogether he will be much missed.

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[1] Brit. Jour. Dermatology and Syph., April, 1925, p. 163.

Medical News.

UNIVERSITY OF CAMBRIDGE.—At examinations held recently the following candidates were successful :—

DIPLOMA IN PUBLIC HEALTH.

Old Regulations : John R. Hayman ; James A. G. Keddie ; William B. Stott, Christ's. *New Regulations :* Andrew N. Fergus ; Mary K. Henegan ; Reginald A. Mansell, Emm. ; Charles F. Pedley, Jesus ; Charles J. Stocker, Trin. (distinguished in Part I.) ; Francis C. Tibbs ; and Man K. Yue, Christ's (distinguished in Part II.).

DIPLOMA IN HYGIENE.

Abdel R. Hassan and Labib Shehata.

ROYAL COLLEGE OF PHYSICIANS OF LONDON.—The third award of the Streatfeild Research Scholarship has been made by the executive committee of the College to Mr. Norman Leslie Capener, F.R.C.S. This scholarship was founded in 1916 through the generosity of Mrs. Eliza Streatfeild, who gave the sum of £10,000 to the Royal College of Physicians and the Royal College of Surgeons, the income thereof to be expended upon the promotion of research in medicine and surgery. The subject of Mr. Capener's research will be the Comparative Anatomy and Function of the Prostate Gland. The research will be carried out at St. Bartholomew's Hospital and the Zoological Society.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.—At a meeting of the Council on Oct. 8th, Sir John Bland-Sutton, President, in the chair, the annual report of the Council to be submitted to the Fellows and Members at the annual meeting on Thursday, Nov. 19th, was submitted, approved, and adopted.—The President reported that a Sir Gilbert Blane Medal had been awarded to the following medical officer of the Royal Navy : Surg. Lieut.-Commdr. Lionel Frederick Strugnell, promotion examination, 1925.—The President also reported that the Bradshaw Lecture on Gastro-jejunostomy would be delivered by Mr. James Sherren on Wednesday, Nov. 11th, at 5 P.M. ; and that the Thomas Vicary lecture on the Mediæval Conception of the Anatomy and Physiology of the Central Nervous System would be delivered by Prof. William Wright on Wednesday, Nov. 18th, at 5 P.M., at the College.—Diplomas of Member were conferred upon the following candidates who have complied with the by-laws of the College :—

K. Bandaly, Cairo and Univ. Coll. ; Leighton M. Clark, King's Coll. Hosp. ; Andrew N. Coomaraswamy, Madras and London Hosp. ; Gerald N. Golden, London Hosp. ; Tom A. Griffiths, Cardiff and Liverpool University ; Allan B. Hewlett, King's Coll. Hosp. ; Thomas Kemp Homer, Birmingham University ; and Elizabeth M. Weideman, St. Mary's Hosp.

VICTORIA UNIVERSITY OF MANCHESTER.—At the examination for the Diploma in Public Health, held recently, the following candidates were successful :—

Part II.—R. B. Boston, P. D. Connolly, E. R. Gilmore, and A. C. Newman.
Part I.—Georgie I. Brodie and Margaret Sproul.

THE Council of the British Empire Cancer Campaign has approved a grant of £1000 a year for six years to Dr. Thomas Lumsden, at the Lister Institute of Preventive Medicine, to enable him to continue the experimental work on cancer antisera reported in THE LANCET of Feb. 21st and Sept. 12th, 1925. Further grants have also been made to Dr. J. C. Mottram, Dr. Louis Cassidy, and Prof. R. T. Leiper.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION.—A lecture on the Diagnosis of Pulmonary Tuberculosis will be delivered by Dr. Marcus Paterson in the Lecture Hall of the Medical Society of London, 11, Chandos-street, on Monday, Oct. 19th, at 5.30 P.M., and all members of the medical profession will be welcome. Several special courses have been arranged for the month of November. The Chelsea Hospital will hold a three weeks' course from Nov. 2nd, consisting of demonstrations, operations, and lectures by members of the staff. Throughout the month the London Lock Hospital has arranged a comprehensive course in venereal diseases. The Royal Waterloo Hospital will give a course in Medicine, Surgery, and Gynæcology from Nov. 23rd to Dec. 12th, embracing the study of diseases of children and women from all aspects. From Nov. 3rd to 28th Dr. Porter Phillips and Dr. Thomas Beaton will give twice weekly lecture-demonstrations on Psychological Medicine. An evening course for general practitioners has been arranged at the London Temperance Hospital from Nov. 1st to 13th. There will be a course in Diseases of the Chest, Heart, and Lungs at the Victoria Park Hospital from Nov. 9th to 21st. Application for copies of each of the syllabus and for the general programme should be made to the Secretary, at 1, Wimpole-street, London, W. 1.

MEDICAL OFFICERS OF SCHOOLS ASSOCIATION.—A meeting of this association will be held at 11, Chandos-street, Cavendish-square, W., on Friday, Nov. 6th, at 4.45 P.M., when Dr. A. I. Simey will read a paper on the Prophylaxis of Common Colds.

A CONFERENCE on Social Insurance in its national and international aspects is to be held under the auspices of the League of Nations Union from Nov. 23rd–26th at the London School of Economics. Sessions of the Conference will deal with the following aspects of the problem : The Government pensions scheme ; the unification of social insurance ; health insurance ; workmen's compensation and accident prevention ; unemployment insurance ; family insurance ; and the international aspects of social insurance. Full particulars of the Conference may be obtained from the Secretary, League of Nations Union, 15, Grosvenor-crescent, S.W. 1.

CLERICAL, MEDICAL, AND GENERAL LIFE ASSURANCE SOCIETY.—The report presented at the 101st annual general meeting of the Clerical, Medical, and General Life Assurance Society, held at 15, St. James's-square, London, on Oct. 9th, showed that during the year 1889 new assurances were made for a total sum of £1,616,869, while re-assurances were effected to the extent of £227,500, making the net new life business £1,389,369, as compared with £1,324,691 in the previous year. The total premium income was £672,332, or an increase of £62,840. The claims by death amounted to £352,610, an increase of £3873 over the previous year, which is accounted for by the expansion of the business of the Society. The expenses of management, after allowing for the cost of annuity business, represented £14 7*s.* 5*d.* per cent. of the premium income. As a result of the year's transactions the Life Assurance Fund increased from £7,961,035 to £8,464,681. This growth of £503,646 exceeds that of any previous year.

DENTAL BOARD OF THE UNITED KINGDOM.—A course of four lectures (illustrated by lantern slides) on General Anæsthesia will be delivered during the forthcoming winter season. The series will consist of the following : (1) Respiration in Anæsthesia, and (2) the Absorption and Elimination of Volatile Substances in the Lungs, by Prof. Yandell Henderson, Yale University ; (3) the Circulatory Changes in Anæsthesia, and the Use of Oxygen, by Dr. Leonard Hill ; (4) the Metabolic Changes in Chloroform Poisoning, by Prof. Noel Paton. The lectures will be given in :—London : In the Robert Barnes Hall, the Royal Society of Medicine, 1, Wimpole-street, W., at 8.30 P.M., on Oct. 22nd, 23rd, and 30th, and Jan. 11th. Manchester : In the Medical School, the University Buildings, Oxford-road, at 5.30 P.M. on Oct. 26th and 27th, Nov. 3rd, and Jan. 13th. Edinburgh : In the Surgery Theatre, the University, at 5 P.M., on Oct. 29th and 30th, Nov. 5th, and Jan. 15th. The course is intended primarily for dentists and medical practitioners. Dental students are invited to attend. Tickets of admission are not required.

LIVERPOOL MEDICAL INSTITUTION.—On Thursday, Oct. 8th, the members of this society met to offer their congratulations to no fewer than three of their number on the completion of 50 years' membership. These were Dr. A. Craigmile, of Wallasey ; Dr. A. C. E. Harris, of Birkenhead ; and Mr. F. T. Paul. Allusion was made to the large part played by Dr. Craigmile in the foundation of the Victoria Central Hospital, Wallasey, and to the leading position taken now for many years by Dr. Harris in the profession in Birkenhead. Mr. Rushton Parker and Mr. T. H. Bickerton recalled their experiences of Mr. Paul's earlier days, when he went to Liverpool as resident medical officer and superintendent at the Royal Infirmary, duties now carried out by 11 different individuals. The surgeons of the city had combined to have a number of Paul's " Selected Papers " published as a tribute of their respect and admiration for the man and his work, and at the close of the meeting a formal presentation of this was made.

NEW STOKE-ON-TRENT POOR-LAW HOSPITAL.—The Stoke-on-Trent guardians have approved in principle a scheme for the erection of a new Poor-law hospital which, it is stated, will cost £500,000. The scheme provides for the erection of a hospital at Stoke with 400 beds, capable of expansion to 800, together with all the other adjuncts of a great modern hospital. The decision was arrived at after a favourable report by Dr. F. W. Ellis, chief medical officer of the Birmingham Union, based upon an inspection of the existing institutions at Tunstall and Stoke. Dr. Ellis strongly recommended the centralisation of hospital services for Poor-law purposes by transferring the patients to the Stoke institution and the building of the new hospital there. He suggested that the new hospital should be utilised for the treatment of acute cases, and that the two existing ones should be retained for chronic sick and infirm cases.

THE Wellcome Historical Medical Museum, 54A, Wigmore-street, W., will be closed for cleaning and structural alterations from Oct. 19th until Nov. 30th.

TUBERCULOSIS SOCIETY.—A meeting of this society will be held to-day (Friday) at 8 P.M., at 1, Upper Montague-street, Russell-square, London, W.C., when Dr. F. G. Chandler will read a paper on Pulmonary Tuberculosis in Children.

DEVON AND EXETER MEDICO-CHIRURGICAL SOCIETY. The first meeting of the session will be held on Friday, Oct. 23rd, at the Royal Devon and Exeter Hospital, Exeter, the President, Mr. J. M. Ackland, in the chair. An address will be given by Sir StClair Thomson on the Surgical Anatomy of the Nose and Accessory Sinuses.

THE death has occurred at Hampstead on Oct. 10th of Dr. C. F. Sonntag, Prosector to the Zoological Society and demonstrator in anatomy at University College. Dr. Sonntag was at one time medical officer to the Great Portland-street Red Cross Clinic for Disabled Officers, and recently published a standard work on the Morphology and Evolution of the Apes and Man.

UNIVERSITY OF EDINBURGH: CAMERON PRIZE LECTURES.—Prof. Harvey Cushing, who was awarded the Cameron Prize of 1924, will deliver three lectures in the Anatomy Class-room, University New Buildings, on the undermentioned dates at 4 P.M.:—Monday, Oct. 19th: The Circulation of the Cerebro-spinal Fluid; chairman, Sir E. Sharpey Schafer. Tuesday, Oct. 20th: The Pituitary Gland; chairman, Sir J. Alfred Ewing. Thursday, Oct. 22nd: Brain Tumours; chairman, Sir Harold J. Stiles. Students and graduates in medicine are invited to attend.

CENTRAL LONDON THROAT, NOSE AND EAR HOSPITAL.—Following the opening lecture of the winter session by Dr. William Hill on Oct. 6th, the annual dinner of the medical staff was held at the Trocadero Restaurant the next evening, Mr. Harold Kisch in the chair. A total of 52 were present, and amongst the guests were: The lecturer, Dr. W. Hill; the President of the Royal Society of Medicine, Sir StClair Thomson; the President of the Fellowship of Medicine, Sir William Arbuthnot Lane; Sir Thomas Horder; the President of the Laryngological Section, Royal Society of Medicine, Dr. W. H. Kelson; the Honorary Secretary of the Fellowship of Medicine, Mr. Herbert Paterson; Mr. Herbert Tilley; Mr. G. J. Badgerow; Mr. T. B. Layton; Dr. Watson-Williams; Dr. J. H. Chaldecott; and the Chairman of the Committee of Management of the Hospital, Mr. Carmichael Thomas, with his colleagues, Mr. Mackillop Brown and Mr. Glenton Lewis.

LIVERPOOL: VISIT OF THE MINISTER OF HEALTH.—During a two days' visit to this city Mr. Neville Chamberlain busied himself chiefly with the inspection of the new housing and re-housing problems of Liverpool. The site for the proposed ten-story tenement was visited, and at the dinner in the town hall on Oct. 8th he expressed himself as profoundly impressed with the boldness and courage with which the subject had been faced, and more particularly for the imagination shown in planning communications between the newer areas and the centre of the town. He also advanced the consideration as to whether the time had not come when great communities should consider a change of ownership of slum property, substituting for a landlord, unwilling or unable to fulfil his responsibility, one which has ample resources and a sense of public duty. On the second day Mr. Chamberlain visited the various institutions under the guardians and also the municipal hospital at Fazakerley for infectious diseases, including phthisis and surgical tuberculosis. At the latter institution he spoke of his sympathy with the campaign for a plentiful, clean, tubercle-free milk-supply, and also promised to see that, so far as the financial condition of the country would allow, a due proportion of the Government's resources was secured for the extension of the campaign against tuberculosis, above all for the treatment of the disease in childhood.

Hospitals Contributory Scheme.—At a recent meeting of the Liverpool Hospital Staffs' Association the opportunity was taken of drafting certain resolutions bearing upon the proposed Lord Mayor's contributory scheme for the support of the voluntary hospitals, which is modelled largely upon the Sheffield "penny-in-the-pound" idea. The following points were emphasised: (1) That there should be no differentiation in treatment between contributors and non-contributors; (2) that it should be recognised that contributors should attend the hospitals only with the knowledge of their private medical attendant, except in cases of urgency; (3) that in any contract entered into by hospital authorities for the provision of medical services provision should be made for the payment of a certain proportion into a medical staff fund. It was noteworthy that these points, after full discussion, were agreed to unanimously by the meeting, at which all the hospitals were fully represented.

Medical Diary.

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

Tuesday, Oct. 20th.

GENERAL MEETING OF FELLOWS: at 5.30 P.M.
Ballot for election to the Fellowship.

PATHOLOGY: at 8.30 P.M.
Papers:
W. Cramer: Systemic Factors in Carcinogenesis.
C. C. Okell and H. J. Parish: Virulence Testing of the Diphtheria Bacillus.

Wednesday, Oct. 21st.

HISTORY OF MEDICINE: at 5 P.M.
Paper:
Dr. J. D. Rolleston (President): Voltaire and Medicine. Part I.

SURGERY: at 8.30 P.M.
Presidential Address:
Sir Lenthal Cheatle: The Present State of the Teaching and Practice of Surgery.

Friday, Oct. 23rd.

STUDY OF DISEASE IN CHILDREN: at 5 P.M. (Cases at 4.30 P.M.)
Cases:
Dr. C. Worster-Drought: Case of Hirschsprung's Disease with Double Optic Atrophy.
Dr. C. Worster-Drought (shown by Dr. E. W. Fulton): Case of Incoördination, for Diagnosis.
Mr. W. E. Tanner: Congenital Malformation of Tongue and Pharynx.
Dr. D. Paterson: Old Case of Cœliac Disease.
Dr. N. Hobhouse: Lesion of Mid-Brain and Pons.

EPIDEMIOLOGY AND STATE MEDICINE: at 8 P.M.
Paper:
Dr. T. Stacey Wilson: On the Management of Scarlatinal Epidemics in Boarding Schools (illustrated by photographs of Desquamation, Scarlatinal and otherwise).

LONDON DERMATOLOGICAL SOCIETY, 49, Leicester-square, W.C.
WEDNESDAY, Oct. 21st.—4.30 P.M. (at St. John's Hospital, Leicester-square), Pathological Specimens and Clinical Cases. 5 P.M., Dr. Knowsley Sibley: Treatment of Diseases of the Skin by Ultra-violet Rays.
The Monthly Dinner will be held at the Cavour Restaurant, Leicester-square, at 6.30 P.M. Price 7*s.* 6*d.* per head.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

THE FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W.
MONDAY, Oct. 19th, to SATURDAY, Oct. 24th.—Fellowship of Medicine Lecture, Medical Society, 11, Chandos-street, Mon., 5.30, Dr. Marcus Paterson: The Diagnosis of Pulmonary Tuberculosis. — COMBINED CHILDREN'S COURSE, Paddington Green Children's Hospital, Victoria Hospital, and Children's Clinic. Morning and afternoon sessions.—CENTRAL LONDON THROAT, NOSE, AND EAR HOSPITAL, Gray's Inn-road. Special Course in Laryngology, Rhinology, and Otology. Clinical course and Operative Surgery course, of which one or both may be taken (second week).—LONDON SCHOOL OF HYGIENE AND TROPICAL MEDICINE, Endsleigh-gardens. Tuesday and Thursday, Clinical demonstration by Dr. G. C. Low and Dr. Manson-Bahr at 2.—ST. PETER'S HOSPITAL, Henrietta-street. Special course in Urology. Clinical work every afternoon and lecture.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N.
THURSDAY, Oct. 22nd.—3 P.M., Demonstration: The X Ray Examination of Pulmonary Tuberculosis. 4.30 P.M., Lecture: The Treatment of Pulmonary Tuberculosis with Special Reference to Artificial Pneumothorax.
Daily: In-patient and Out-patient Clinics in General and Special Departments, Operations, &c.

THE HOSPITAL FOR SICK CHILDREN, Great Ormond-street, W.C.
THURSDAY, Oct. 22nd.—4 P.M., Dr. Frew: Acidosis.

ST. JOHN'S HOSPITAL, 49, Leicester-square, W.C.
TUESDAY, Oct. 20th.—5 P.M., Dr. H. W. Barber: Bacteriology and Mycology.
THURSDAY.—5 P.M., Dr. J. M. H. MacLeod: Morphology and Histopathology of Elementary Lesions.

MANCHESTER ROYAL INFIRMARY POST-GRADUATE COURSE.
TUESDAY, Oct. 20th.—4.15 P.M., Dr. C. H. Melland: Some Tropical Diseases.
FRIDAY.—4.15 P.M., Prof. W. L. Bragg: X Rays.

ANCOATS HOSPITAL POST-GRADUATE LECTURES.
THURSDAY, Oct. 22nd.—4.15 P.M., Mr. E. E. Hughes: The Significance of Urinary Symptoms.

NATIONAL HOSPITAL FOR THE PARALYSED AND EPILEPTIC, Queen-square, Bloomsbury, W.C. 1.

POST-GRADUATE COURSE: October-November, 1925.

Clinical Lectures and Demonstrations.

Monday, Oct. 19th.—2 p.m., Out-patient Clinic: Dr. Hinds Howell. 3.30 p.m., An Introduction to the Study of Aphasia: Dr. Kinnier Wilson.

Tuesday, Oct. 20th.—2 p.m., Out-patient Clinic: Dr. Walshe. 3.30 p.m., Compression Paraplegia from a Surgical Standpoint: Mr. Armour.

Thursday, Oct. 22nd.—2 p.m., Out-patient Clinic: Dr. Kinnier Wilson. 3.30 p.m., Ocular Palsies: Dr. Gordon Holmes.

Friday, Oct. 23rd.—2 p.m., Out-patient Clinic: Dr. Adie. 3.30 p.m., Demonstration of Swedish Remedial Exercises (in Exercise Room): Mr. Elmquist.

The fee for the Course, including Pathology Lectures, is £5 5*s*. For those who hold Perpetual Tickets the fee is £3 3*s*.

Course of Lectures and Demonstrations on the Pathology of the Nervous System.

Thursday, Oct. 22nd.—12 noon, Ischæmia: Dr. J. G. Greenfield.

Course of Lectures and Demonstrations on the Anatomy and Physiology of the Nervous System.

Monday, Oct. 19th.—12 noon, The Spinal Cord (continued): Dr. J. L. Birley.

Dr. H. J. MacBride will give a Course of Eight Clinical Demonstrations, chiefly on Methods of Examination of the Nervous System, in the Wards at 10 a.m. on Tuesdays and Fridays, if sufficient entries are received. The fee for this Course will be £2 2*s*. (commencing Tuesday, Oct. 20th).

Mr. Armour and Mr. Sargent operate at the Hospital on Tuesday and Friday mornings at 9 a.m., or at such other times as may be announced.

Any part of the Course may be taken separately. Special arrangements will be made for those unable to take the whole Course.

Fees should be paid to the Secretary of the Hospital at the Office on entering for the Course.

J. G. Greenfield, Dean of Medical School.

ROYAL INSTITUTE OF PUBLIC HEALTH, 37, Russell-square, W.C.

Wednesday, Oct. 21st.—4 p.m., Dr. M. B. Ray: The Prevention and Arrest of Rheumatic Disease.

PEOPLE'S LEAGUE OF HEALTH, Fyvie Hall, Regent-street Polytechnic.

Friday, Oct. 23rd.—6 p.m., Mr. E. B. Turner: Recreation and Physical Exercise.

Appointments.

Glennie, J. A. R., M.B., C.M. Aberd., has been appointed one of the Medical Referees under the Workmen's Compensation Act for the Districts of the Camelford, Holsworthy, and Launceston County Courts.

MacAdam, W., M.D. Glasg., M.R.C.P. Lond., Honorary Assistant Physician to the Leeds General Infirmary.

Oldham, J. B., M.B., Ch.B. Liverp., F.R.C.S. Eng., Honorary Assistant Surgeon to the David Lewis Northern Hospital, Liverpool.

Toogood, F. S., M.D. Lond., one of the Medical Referees under the Workmen's Compensation Act for the Districts of the Bodmin and Liskeard County Courts.

St. Mary's Hospitals, Manchester: Brentnall, C. P., M.B., Ch.B. Liverp., Honorary Assistant Surgeon; Pope, S., M.B., Ch.B. Manch., and Crowther, J. A., M.B., Ch.B. Manch., House Surgeons at the Whitworth-street West Hospital; Adam, R. S., M.B., Ch.B. Manch., House Surgeon at the High-street Hospital; Craig, Jennie D., M.B., Ch.B., Assistant Medical Officer, Out-patient Department; Knight, Barbara M., M.B., Ch.B., Clinical Assistant.

Certifying Surgeons under the Factory and Workshop Acts: Hoey, J. T. S., M.B., B.Ch. Oxf. (Petersfield); Graham, J. (East Grinstead); Morris-Jones, J. H., L.R.C.P. & S. Edin., L.R.F.P.S. Glasg. (Colwyn Bay); and Webb, H., L.R.C.P. Lond., M.R.C.S. (Bexhill).

Vacancies.

For further information refer to the advertisement columns.

Barry Urban District Council.—H.S. At rate of £200.

Birmingham, Highbury Group of Hospitals.—Jun. Surg. O. £350.

Birmingham, St. Chad's Hospital.—Res. M.O. £100.

Bolton County Borough.—Asst. M.O.H. and Asst. Sch. M.O. £600.

Brighton, New Sussex Hospital for Women and Children.—Hon. Asst. Anæst.

Brighton, Royal Sussex County Hospital.—Hon. M.O. for Dis. of Ear, &c.

City of London Hospital for Diseases of the Heart, Victoria Park, E.—H.P. at rate of £100.

Colwyn Bay and Colwyn Urban District Council.—M.O.H., &c. £800.

Eastbourne, Princess Alice Memorial Hospital.—Res. H.S. At rate of £175.

East London Hospital for Children and Dispensary for Women, Shadwell, E.—H.P. At rate of £125.

Essex Administrative County.—Asst. Tuberc. O. £600.

Greenwich, Dreadnought Hospital.—S. in charge of Out-patients.

Hospital for Sick Children, Great Ormond-street, W.C.—Med. Reg. and Pathologist. £300.

Hospital for Women, Soho-square, S.W.—Pathologist and Reg. £100.

Liverpool Hospital for Consumption and Diseases of Chest, Mount Pleasant.—Hon. Asst. P.

Metropolitan Hospital, Kingsland-road, E.—Sen. and Jun. H.P. Sen. and Jun. H.S. Also Two Cas. O.'s. Each at rate of £100.

National Hospital for the Paralysed and Epileptic, Queen-square, W.C.—Res. M.O. £200.

Newark Hospital and Dispensary.—Res. H.S.

Poplar Hospital for Accidents, East India Dock-road, E.—Second Res. Surg. O. £175.

Prestwich County Mental Hospital, near Manchester.—Med. Supt. £800.

Queen's Hospital for Children, Hackney-road, Bethnal Green, E.—Asst. S.

Rochester, St. Bartholomew's Hospital.—Third Res. M.O. At rate of £200.

Royal Chest Hospital, City-road, E.C.—Phys. to Out-patients. £50.

Royal London Ophthalmic Hospital, City-road, E.C.—Sen. H.S. £150.

St. John's Hospital for Diseases of the Skin, 49, Leicester-square, W.C.—Pathologist. £100.

St. Mary's Hospital for Women and Children, Plaistow, E.—Res. M.O. and Asst. Res. M.O. At rate of £175 and £130 respectively.

Stoke-on-Trent, North Staffs. Royal Infirmary.—H.S. £150. Also H.P. £125.

Seychelles Government.—Asst. M.O. and Res. S. Rs.6500.

Births, Marriages, and Deaths.

BIRTHS.

Heywood-Waddington.—On Oct. 5th, at St. Catherine's-road, Littlehampton, to Dr. and Mrs. Heywood-Waddington—a daughter.

Murphy.—On Oct. 7th, the wife of James Murphy, M.B.E., F.R.C.S.E., Middlewich, of a daughter.

Richardson.—On Oct. 6th, at Edinburgh, the wife of Major D. T. Richardson, R.A.M.C., of a daughter.

Urquhart.—On Oct. 12th, at the Little House, Farnham, Surrey, the wife of J. L. T. Urquhart, L.D.S. R.C.S., of a son.

MARRIAGES.

Chavasse—Jackson.—On Oct. 14th, at St. John's, Putney, Charles Cecil Howard, M.A., B.M. Oxf., son of Mr. and Mrs R. E. Chavasse, of Barnards Green House, Great Malvern, to Mabel, daughter of the late Mr. Jackson and Mrs. Jackson, of 67, Clarendon-road, Putney.

McKendrick—Evans.—On Oct. 7th, at St. Martin-in-the-Fields, William McKendrick, M.B., Ch.B., to Dorothy, third daughter of Howell T. Evans, M.R.C.S., and Mrs. Evans, The Laurels, Blackwood, Mon.

Snodgrass—Owen.—On Oct. 3rd, at St. Saviour's Church, Walton-street, S.W., Captain William McElrea Snodgrass, M.C., R.A.M.C., to Kathleen, elder daughter of A. D. Owen, of Pont-street, S.W.

Walker—Clouston.—On Oct. 6th, at Frodingham Parish Church, Arnold Learoyd Walker, M.A., M.B., B.Ch., to Gwenville, youngest daughter of the late Mr. and Mrs. J. Clouston, of Middlesbrough.

Watson—Lea.—On Sept. 15th, at Christ Church, Mussoorie, Major W. L. Watson, O.B.E., I.M.S., Meerut, to Dorothy Ellen, eldest daughter of Mrs. H. Lea, Burton-on-Trent, and the late Henry Lea.

Wilson—Ellicock.—On Oct. 7th, at Holy Trinity Church, Aldershot, Captain J. A. Lawther Wilson, R.A.M.C., to Gladys Vera, daughter of Captain Ellicock, Aldershot.

DEATHS.

Cooper.—On Oct. 10th, Percy Robert Cooper, M.D., F.R.C.S., of Glenthorne, Bowdon, Cheshire.

Lawrie.—On Oct. 8th, from pneumonia, Alexander Lawrie, M.B., Ch.B., of Hither Green-lane, S.E.

Prest.—At Glenafton, New Cumnock, Ayrshire, on Oct. 8th, Jessie Annie (née Creighton), the loved wife of Edward Ernest Prest, M.D.

Serpell.—On Oct. 11th, at nursing home in Plymouth after operation, Hugh Hamilton Serpell, M.R.C.S., L.R.C.P., late Lieut.-Colonel R.A.M.C., of Polyphant House, Lewannick, Cornwall, aged 48.

Sonntag.—On Oct. 10th, at his residence, Belsize Park-gardens, N.W., Charles Frederick Sonntag, M.D., Ch.B. Edin., Prosector to the Zoological Society of London.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

His Majesty the King's Royal licence and authority has been granted to Dr. Percy Glyn Savours Williams, Principal Medical Officer of Health, Cairo City, to wear the decoration of the Order of Ismail, Insignia of the Third Class, which has been conferred on him by the King of Egypt.

Notes, Comments, and Abstracts.

HOSPITALS, GENERAL AND SPECIAL.*

BY N. BISHOP HARMAN, M.B. CAMB., F.R.C.S. ENG.,
SENIOR OPHTHALMIC SURGEON TO THE WEST LONDON HOSPITAL, ETC.

The Question at Issue.

THE part that should be played by general and special hospitals in a comprehensive hospital organisation is a matter of growing interest. It is of interest whether the problem be viewed from the national or local standpoint. Hospital organisers must necessarily view the problem as it applies to the area of their work, but these same workers should on occasion take the larger view of national requirements, and envisage the problem as it appears to those whose duty it is to strive to adjust the demands of area and area. Few areas can or do stand alone. Modern facilities for intercommunication have laid flat the boundaries of formerly self-contained areas, so that there can be found but few which can now claim that they are independent of the greater whole. It is well at the outset to define our terms, and to do so in relation to present-day practice. Whatever the connotation of the terms may have been in the past, we now use the words "general" and "special" in a strictly regular manner. We mean by a general hospital one that admits to its services all kinds, or almost all kinds, of disease in any age or sex; and we mean by a special hospital one that restricts its services to one type of disease or one type of patient as defined by age or sex. The question at issue is the relative advantage or disadvantage of such general or special hospitals.

Origin of Hospital Types.

It is of interest to look back upon the origin of these types of hospitals. The earliest hospitals were almost entirely general hospitals. They admitted to their services patients suffering from any kind of disease that needed treatment. Special hospitals are for the most part of modern origin. In the early decades of the nineteenth century, concurrent with the rapid increase of industry in this country and the growth of large urban populations, there was an equally rapid development of medical science. There was an increasing knowledge of and ability to treat general diseases, and also an immense development in the recognition of and skill in the treatment of disease of special regions of the body. The advance was so rapid that large additional clinical facilities were needed. In this country, where the enthusiasm and energy of volunteer works have always blazed the path of progress and brought new fields of work into cultivation, the process of development of hospital service followed what is to us the natural mode. For instance, keen workers in the field of eye diseases started clinics, or dispensaries as most of them were first called, for the treatment of these diseases. One or two doctors in association established in a small way in some convenient house an institution which later has become a recognised eye hospital. This is the story of most of our best known ophthalmic hospitals—e.g., Moorfields in London; the hospitals in Edinburgh, Glasgow, Oxford, and Maidstone, to cite only a few.

It would appear that there was no idea in the minds of these early founders of special hospitals of separation or isolation from or competition with general hospitals. There was a need, so they proceeded to meet it in the simplest way. To expand an existing institution was or might be difficult. To set up something new was easy, and the new made a ready appeal to philanthropists. This method of working accounts for conditions that seem to us to-day extraordinarily anomalous. There is at Charing Cross in London a large general hospital with its own eye department and next door to it there is an eye hospital; the walls of the two buildings are conterminous. There is in Maidstone at one end of a short street a general hospital and at the other end a hospital for the diseases of the eye, nose, and ear. These seemingly anomalous conditions are explained by the natural idea of the founders of the later special hospitals to provide for new wants, as near as might be to the older foundations, which formed as it were a focus of medical work in their own and the public eye.

In later days there was indeed some spirit of rivalry in the formation of further special hospitals. General hospitals recognised the necessity for special departments in their own organisation, and these with the increasing number of new special hospitals engendered a competition for patients which was not altogether healthy in that it led to abuse of hospital facilities. Those conditions are less evident now. New hospitals are not easy to form, the tendency is to improve and expand existing institutions, but there is still some sign of excessive specialisation, especially, under the pressure of social reformers, in the provision of special clinics under statutory authority—e.g., tuberculosis dispensaries, &c.

The Acid Test of Efficiency.

The determination of the relative value of special and general hospitals must be based upon their working efficiency in regard to the patient. Which type of hospital is best for the patient, whatever be the nature of his ailment; and which in the long run fosters the best type of medical practitioner—that is to say, the practitioner most able to cope with the disability of the patient.

My answer to these questions may be given now, so that there may be no doubt in the mind of the reader as to the trend of the argument. In my judgment there can be no doubt that the general hospital is better than the special hospital, better for the patient, and better in that it cultivates a superior type of medical work.

The human body must always be considered as a whole if the medical practitioner is to minister successfully to its needs. The members of the body cannot and must not be considered as detached units. Modern medicine reaffirms and proves the Pauline dictum, "all the members of the body, being many, are one body." A defective eye may react upon the whole body or the defect of the eye may be a reaction brought about by a general bodily ailment. And so it is with disease of any other of our special organs. To limit the diagnosis to the "eye," the "nose," or whatever may be the organ under examination, is to limit the power of curative medicine and the prospects of the patient. Work in a special hospital tends to be limited, bounded as it were by a ring fence. It is a natural effect of a limiting name. That this tendency is being resisted there is ample evidence, and some of this evidence will be noted later. On the other hand, in a general hospital there is a constant recognition of the full field of medical work. There is daily contact between the general physician and surgeon, the eye surgeon, the gynæcologist, the dental surgeon, and so forth. Each of these gives to the other a daily hint of his field of work, and with that there is an unconscious widening of outlook for each member of the staff, so that no matter to what department a patient may be drafted after the preliminary examination the chief of that department is always conscious of the whole anatomy of his patient. The physician or surgeon of a department recognises that he is one of a team, every member of which is at his service in elucidating the primary origin of the disease under investigation, and through such combination there is laid the foundation of ever-widening extensions of preventive medicine.

Recent Tendencies.

The advantage of the general hospital plan of work is demonstrated by recent developments of special hospitals. It is rare now to find in a special hospital the members of the staff limited to practitioners of that speciality. On the staff of an eye hospital there will be found neurologists, aurists, and even dental surgeons. On the staff of a nerve hospital there will be found eye surgeons, aurists, gynæcologists, orthopædic surgeons, and so forth. On the staff of a lying-in hospital will be found physicians and surgeons, a physician for antenatal work, another for infant consultations, and also ophthalmic and dental surgeons. Such a range of staffing in special hospitals is proof of the desire for a wide outlook and comprehensive team work; in fact, it is an attempt to make the work of the special hospital as near akin to that of a special department in a general hospital as is possible. Again, in recent years there have been amalgamations and close associations formed between general and special hospitals whereby the special hospital has become an integral part or department of the greater general hospital.

It may be asked: Is there no countervailing advantage in the special hospital—e.g., in the intensive cultivation of one branch of work in one place? There is such an advantage. Doctors are as gregarious as other human workers. It is of interest to us to work together, especially when we are doing the same work. Minds are stimulated, ideas are kindled, and on occasions special advances are secured. But there is a risk of one-sided growth through loss of contact with general medicine and surgery or of loss from failure to know what other branches of medicine are doing. Special hospitals are not the sole means whereby we specialists intercommunicate. We have our special medical societies, our sections in the greater medical societies, and our clinical meetings in hospitals.

The Rule and Exceptions.

My conclusion is that a general hospital with a range of departments covering all modern requirements is the ideal unit of hospital organisation. It provides the maximum of benefit with the minimum of risk. But that does not mean that special hospitals should cease to exist. In a great city special hospitals may be of convenience in dealing with large numbers of patients of a presumably distinctive type, also for concentrating special research and teaching in universities. There may be limitation in the ground space available for a central general hospital, so that outlying clinics attached to the central hospital may be more economical, and if these are annexes of the central organism the disadvantages of excessive specialisation are reduced. Again, certain kinds of disease need long periods of treatment, and treatment in the country rather than in the towns—e.g., orthopædic cases and tuberculosis. Other disease might present danger or inconvenience in the general hospitals —e.g., specific fevers and mental disease. Safety and convenience make for separate accommodation in these cases. But there is no physician who will not agree that so far as fevers are concerned separation is a matter of convenience only and not an ideal medical arrangement. Whilst in the case of mental diseases the evidence given before the Royal Commission now sitting is conclusive that the ideal for mental cases is treatment in association with general hospitals. Something more than convenience justifies children's hospitals; they are, in fact, general hospitals for children, their smaller size makes them better units for the little ones; but even with these hospitals there are occasional difficulties in dealing with the older children, and in finance because of the relatively high cost of laboratory and physical equipments in small hospitals; both these difficulties make an association with the larger general hospital desirable. The treatment of disease of the nervous system and of orthopædic cases is commonly of such long duration and requires such complicated and special equipment that there is a real justification for separate provision. But there is no such justification for separate hospitals for disease of the eye, nose, ear, throat, skin, heart, rectum, urinary organs, for cancer cases, nor for radiological treatment. All these are better provided for in, or at least in association with, the unit of hospital organisation, the general hospital.

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* Appendix to the Sixth Annual Report of the Voluntary Hospitals in Great Britain (excluding London).

British and American Opinion.

So far as my information goes, this is the trend of opinion within the British medical profession both amongst men in general and in consulting practice. It is also the expressed opinion of the most recent writers on American hospitals, where the English system of voluntary initiative is dominant. Corwin[1] in a survey of the hospital situation in Greater New York writes: "The fact that so large a percentage of hospital beds in the City is to be found in the special hospitals (about 37 per cent.) raises the question of the desirability of such development." He concludes, "It is safe to say that in the City of New York in the development of special institutions the zenith has been reached, and that hospital development in the future will probably proceed along lines of greater scope on the part of general hospitals."

The situation in this country calls for the direction of wise statesmanship. The British Medical Association[2] after consideration of this matter has urged that the local voluntary committees, now existing, should be expanded so as to enable them to survey all the hospital accommodation of their areas, to determine the adequacy of this accommodation, to foster coördination between existing special and general voluntary hospitals and municipal and Poor-law institutions for the treatment of the sick; and to do so without interfering with the domestic autonomy of the several hospitals, each being encouraged to work upon those lines of local initiative which have proved so vital in local work. Further, that the duties of the Voluntary Hospitals Commission should be extended so as to make it a Standing Consultative Hospitals Committee for England and Wales, representative of all the local voluntary hospitals committees, and to act as between the Ministry of Health and the local committees in all matters concerning the hospital policy of the Ministry.

The time is ripe for a move in this direction, and it is better that such a move should come from within the hospitals rather than from without.

THE IDEALS OF SOCIAL HYGIENE.

SPEAKING at King's College on Oct. 8th on biology and social hygiene, Prof. Arthur Thomson said that the contrast between civilised society and wild nature is in many ways disquieting. Among mankind constitutional disease is rife, whereas in wild nature it is rare. Nature is all for health, whilst to man health is often secondary. Nature is always sifting for health, but civilised society shelters cobbles and coddles. The lamentable exhibition of the pathology of sex amongst men is due partly to repressions and suppressions, partly to mental materialisation, and partly to the departure from the old method of preferential mating. Amongst animals sex pathology is rare. In a plea for clear thinking, Prof. Thomson condemned "the fallacy that the endocrine glands determine the personality in ordinary men and women." The healthy body without the healthy mind is only half way to happiness. There is need for a freshened enthusiasm for health and incidentally for beauty. Prof. Thomson suggested ways of promoting such enthusiasm, but insisted that social organisation and ideals must be improved. "We are enmeshed," he said, "in a net of social traditions and trammels handed on from the early industrial or palæotechnic age." Wealth without health is vanity.

The lecture was the first of a series to be held on Thursdays, at 5.30 P.M., at King's College under the auspices of the British Social Hygiene Council. The subject of the course is the Ideals of Social Hygiene, and the lecturers will include Prof. Cyril Burt, Dr. Malinowski, Prof. Percy Nunn, Prof. Winifred Cullis, and Sir Arthur Newsholme.

THE FOULING OF FOOTWAYS BY DOGS.

To the Editor of THE LANCET.

SIR,—I am glad to see from your annotations that you are taking notice of the fouling of the pavements by dogs in Kensington. I have felt very strongly in the matter and went to the M.O.H. for Kensington about it, and I think it was on my suggestion that a notice on the subject was inserted in the tax-note for dogs, but I wish I could feel that any real good has so far been done. The pavements are as foul as ever. I do not think any good will be done until the police can be persuaded to deal with the nuisance, and perhaps your powerful words may help them. I do not think that the traffic can have anything to do with the case. It is a matter for the owners of dogs, who do not take the trouble to train them properly. Why Kensington should be the only borough to take the matter up I do not know. The need for remedy is obvious in all big towns.

I am, Sir, yours faithfully,
WALTER RIGDEN.

West Bolton-gardens, S.W., Oct. 11th, 1925.

A LOCAL PUBLIC HEALTH GUIDE.

THE medical officer of health of St. Pancras, Dr. G. Sowden, has compiled for the use of the medical practitioners in the borough an extremely useful booklet of information. This booklet was circulated during Health Week. It is of handy size for the pocket and contains about 13 pages of printed matter, showing in alphabetical order not only the various public health activities of the borough council, but also information with regard to ambulances, voluntary hospitals, and voluntary societies of all kinds. The function of the maternity and child welfare centres is explained in detail, in order to remove any misconceptions that may exist. The duties of medical practitioners with regard to notifiable diseases, including those notifiable under the Factories and Workshops Acts, are given. The work of the tuberculosis dispensary is explained and the facilities provided with regard to special schools and school clinics, &c., are enumerated. We think the booklet will prove very valuable, especially to those practitioners who have recently begun to practise in the borough. The idea seems well worthy of imitation in other districts.

Messrs. L. G. Coade and Co., electrical engineers, of 55, Temple-row, Birmingham, invite medical men to inspect various models of the K.B.B. ultra-violet lamps for medical therapy.

Mr. John C. Carr (Registered Dentist, 1922) writes that after abundant opportunity of observing the various methods of anæsthetic administration by dentists in America and this country, he is satisfied that gas and oxygen is the one and only general anæsthetic that should be used in the extraction of teeth. But however secure the dentist may feel of his anæsthetic and of his skill as anæsthetist, in any case of doubt as to the presence of existing disease or debility a dental operation should be postponed until the patient has been referred to his medical adviser for examination. In dealing with male patients Mr. Carr's practice is, generally speaking, to give a local anæsthetic and extract only a limited number of teeth at one sitting. Should a general anæsthetic be insisted upon, the physical condition being equal to it, gas and oxygen is given. In women he regards gas and oxygen as perfectly safe, even during pregnancy. He uses the combined apparatus of Hewitt and Weller, the valve being controlled by the left hand.

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[1] The Hospital Situation in Greater New York. Report of or Survey of Hospitals in New York City by the Public Health Committee of the New York Academy of Medicine, prepared by E. H. Lewiniski-Corwin, Ph.D., New York and London, G. P. Putnam's Sons, 1924.

[2] Policy affecting Hospitals. Section A. on Inter-relation and Coördination of Hospital Provision. British Medical Association, London, W.C. 1, 1925.

The Harveian Oration

ON SOME DEVELOPMENTS OF HARVEY'S DOCTRINE

"OMNE VIVUM EX OVO."

Delivered before the Royal College of Physicians of London on Oct. 19th

By Sir FREDERICK MOTT, K.B.E., M.D.,
F.R.C.P. Lond., F.R.S., LL.D. Edin.,

CONSULTING PHYSICIAN, CHARING CROSS HOSPITAL; LATE DIRECTOR OF PATHOLOGICAL LABORATORIES, LONDON COUNTY MENTAL HOSPITALS; HON. DIRECTOR OF RESEARCH IN MENTAL DISEASES TO THE UNIVERSITY AND CORPORATION OF THE CITY OF BIRMINGHAM.

[After referring to the greatness of Harvey as an investigator and to the value of his "De Generatione Animalium," Sir Frederick Mott described the growth of the knowledge of genetics since that work was published. The expansion of Harvey's dictum, *Omne vivum ex ovo* into Virchow's *Omnis cellula e cellula* had opened up a new chapter in physiology and pathology and the investigations which followed had thrown new light on the conceptions of fertilisation. The reviviscence of Mendel's great discovery (1865) of segregation of unit characters had awakened in 1900 an interest in the chromosome theory of heredity, and Sir Frederick Mott gave a brief summary of this theory, in so far as it applied to his subject. Turning to his own research into the function of reproduction and genetics in relation to certain mental diseases, he continued :]

From time immemorial the influence of the sexual function on physical structure, character, and conduct has been known, but it is only within recent times that experimental investigations and clinico-anatomical observations have shown that this influence is dependent upon an internal secretion of an interstitial gland of the testis and ovary respectively, which can function independently of the genetic structure. The testis secretes a hormone which determines, prior to birth, the physical and mental sexual characters, and, at puberty, the secondary sexual characters. The reproductive organs are functionally correlated with the endocrine system of glands, especially the cortex adrenalis, the pituitary, and the thyroid. As the sex instinct gradually matures, a progressive mental and bodily evolution takes place in the male and female, in accordance, not only with the innate dispositions due to sex, race, and familial ancestry, but with the evolution of character due to good or bad habit formations. Habits acquired in early life, although not germinal and transmissible, nevertheless form such stable organised reflex patterns in the nervous system as to be capable of profoundly influencing such inborn dispositions as the moral sense, the self-regarding sentiments, the emotions and passions, and their proper control. At the adolescent period a new great vital urge, stronger even than self-preservation, comes into being to energise all the organs and tissues of the body, especially the nervous system, for the supreme biological end of reproduction and preservation of the species.

The Interstitial Cells of the Testis.

I will now give a short account of my own investigations regarding the interstitial cells in man and their functions. Examination of the testis of a full-term twin fœtus showed tubules containing embryonic spermatogenic cells; between them, lying in loose connective tissue, were seen abundant polygonal cells with a round nucleus lying in an eosin-stained cytoplasm. Many of the cells had the appearance of young cells. There was plenty of evidence of nuclear mitosis, and I came to the conclusion that numbers of the cells had attained maturity and were on the way to a regressive atrophy, leaving only the nuclei. These cells contain a lipochrome substance and lipoid granules. I found that about the fourth month the seminiferous tubules are twice the size of those at birth; instead of being separated by loose connective tissue containing abundant Leydig cells, they are closely approximated, the Leydig cells have almost disappeared, and there are no lipoid granules visible. At the eleventh year I observed very little change in the size of the tubules and the interstitial cells are only discernible by examination with an oil immersion lens. Little or no interstitial lipoid is seen. There are commencing manifestations of nuclear activity and karyokinetic figures, but no spermatids nor spermatozoa. The Leydig cells do not reappear until puberty, when the generative function commences, and the sexual hormone from the interstitial cells begins again to pass into the circulation and determine the bodily and mental secondary sexual characters.

Seeing that the male sexual hormones are active for probably more than six months in prenatal and postnatal periods, it follows that this influence must have been operating on all the somatic cells, including the nervous system, during all that time. If there be an elective storage of the sexual hormone in the nervous system, as Steinach's experiments indicate, then a masculine behaviouristic tendency may thus early be engraven upon the nervous system. Moreover, by the sensitising influence of the testicular hormone, the primary male characters are thus early in life made dominant in all the bisexual somatic cells. The belief in the occurrence of male sex-dominance at an earlier age than the existence of a secretion of the female sex hormone has received fresh support in the very interesting solution of the riddle of the "free martin" by Lillie. He reports a case in which the female characters of a female twin calf were more or less completely suppressed and certain male structures developed as a result of anastomosis of the placental blood-vessels with those of the associated male twin calf. This can only be explained by the influence of a soluble and diffusible hormone derived from the male and carried to the female by the circulating blood. We can thus understand why castration, even in early life, cannot remove entirely the hormonic effect thus early impressed upon the nervous system, nor eliminate entirely the physical primary male sexual characters already determined in the tissues.

Other Endocrine Influence.

There can be no development of sex characters without all the other organs of internal secretion participating; all of the ductless glands, and especially the thyroid, the pituitary, and the adrenal, are influenced by the internal secretion of the sexual glands, and the latter are undoubtedly influenced by the former; indeed, there is a harmonious functional interrelation between the reproductive organs and the whole endocrine system. I have recently investigated a case of dystrophia adiposo genitalis affecting an epileptic imbecile, aged 29 at death. There was no hair on the face; there was polyuria and marked sugar tolerance; there was infantilism of the external genitals; the atrophous undescended testes were no larger than peas and showed microscopically both interstitial cells and spermatogenic cells replaced by fibrous tissue and fibroblasts. Associated with this testicular atrophy was a markedly atrophous pituitary and atrophous thyroid gland; moreover, the cortex adrenalis was much diminished in thickness.

The increase in growth of the long bones of youths castrated in early life is due to retardation of endochondral ossification, and supports the view that the internal secretion of the testis controls calcium metabolism. Similarly in the female there is a relation between the ovarian internal secretion and calcium metabolism, for removal of the ovaries benefits and sometimes cures osteomalacia. Again, the release of calcium from the pelvic bones during pregnancy and parturition may be regarded as a physiological process brought about by an internal secretion of the ovary, the phosphate of lime thus released being utilised by the mammary gland. It is generally assumed that the source of the sexual hormone of the female is connected with the development of the Graafian follicle, and that the cells of the zona granulosa and the internal thecal cells of the follicle secrete a specific soluble substance which passes into the blood and determines the female characters. It may, therefore, be supposed that a continuous conversion of primordial follicles into immature Graafian follicles, from earliest infancy onwards, provides a feminising hormone to counteract the pre-established male dominance in the bisexual cells of the body. This formation of atretic follicles, and subsequently corpora atretica, continues until menstruation occurs and maturation with dehiscence of the follicles takes place. I have found that ovaries at birth and in early infancy contain numerous immature Graafian follicles. Should this follicle formation not occur to a normal physiological extent, it is conceivable that, having regard to the selective action of the hormone on the central nervous system, as revealed by Steinach's experiments, there would be a tendency to masculinisation, especially revealed in mental qualities. The whole of the somatic cells of male and female are, until the dawn of adolescence, engaged in growth and self-preservation, in preparation for reproduction and preservation of the species.

Disorders and diseases of the mind have long been associated with two conditions—namely, heredity and the critical periods of life (adolescence, when the sex instinct matures, and the climacterium, when the sex instinct wanes). These are physiological conditions. Pregnancy, parturition, and lactation in the female are likewise physiological conditions. Two distinguished Harveian orators, the late Dr. J. A. Ormerod and Sir Bryan Donkin, have dealt with the subject of heredity in relation respectively to nervous diseases and criminology, based upon wide experience, but neither of these has treated of the relation of heredity to insanity based upon the study of pedigrees, statistical data, and pathological findings.

Mental Disease without Exogenous Cause.

There are three conditions which prove my argument that there are certain types of mental disease in which the naked-eye appearances of the brain do not afford any indication of an exogenous cause of the disorder and loss of mind presented by the symptoms during life. They are termed respectively dementia præcox, manic-depressive insanity, and involutional melancholia, of which the two latter may terminate in dementia. Through the study of a large number of carefully constructed pedigrees by myself and co-workers, extending in many instances to four or five generations, and of statistics based on a card system extending to 4000 related individuals who have been or were at the time in one of the ten London County asylums, I have come to the conclusion that there is a signal tendency to *antedating* in respect to these types of insanity. That is to say, if a parent suffered with manic-depressive insanity, or a parent or grandparent with involutional melancholia or senile dementia, one or more of the descendants may suffer during adolescence with dementia præcox. In the construction of pedigrees I was particularly struck by the fact that two, three, or even four or five members of the same co-fraternity at about the same age suffered with mental disease—usually dementia præcox; sometimes with manic-depressive insanity; not infrequently with dementia præcox *and* imbecility. This is a more striking proof of hereditary transmission than when a mental disease is transmitted in successive generations.

When there is evidence of insanity or epilepsy in both stocks, or a general neuropathic tendency indicative of mental instability, the liability to dementia præcox is greatly increased in the descendants; therefore in advising (as one often has to do) in regard to marriage, evidence pointing to these special forms of mental disease in both stocks, on one side, still more on both sides even if shown in collaterals, induces one to say definitely from a eugenic point of view that it would be inadvisable—inasmuch as the risk of an insane inheritance for the children is so much the greater. Moreover, in some of the pedigrees it looked as if there were segregation of unit characters, for I was able to find healthy children who married and had a healthy grown-up progeny in the same co-fraternity with cases of dementia præcox and imbecility. But, as the late Dr. Ormerod and Sir Bryan Donkin pointed out in their interesting Harveian Orations, there are too many complicating factors to permit of Mendelian principles, which are so striking in animals where breeding can be controlled, specially in relation to mental diseases. I have to omit here the statistical data, but I should like to refer to one result of them, because it supports my premiss. Prior to the war the number of cases of dementia præcox admitted to asylums was about equal in the two sexes, likewise the average age incidence (about 23 years). During the war there were half as many male admissions of dementia præcox as females whose parents were or had been in the London county asylums. The age of these males averaged 17·5 instead of 23·5; the reason being that those over the age had been conscripted, and I may state that 14 per cent. of the insane in the Army were cases diagnosed as dementia præcox.

Dementia Præcox a Vital Defect.

By a comparison of the mental and bodily conditions of an acquired mental disease—general paralysis of the insane—with the mental and bodily conditions found in dementia præcox, I shall endeavour to show that dementia præcox is a vital defect of the reproductive organs, and of the brain in particular, and probably of the whole body.

Spermatogenesis.—I have investigated spermatogenesis in 108 cases dying in hospitals and asylums at different ages and in different bodily states, including normal death from shock of injury. I have found it active from puberty to old age (81) with individual variations in degree. In cases where severe chronic disease occurred in early life there has been found absence or deficiency of spermatogenesis. In adults dead of shock following accident, tuberculosis, dysentery, broncho-pneumonia, enteric fever, gangrene of lung, active spermatogenesis was found. It was absent in several cases of prolonged extensive suppuration and in several cases of cancer. But these were diseases in which an active prolonged cell proliferation had taken place.

In general paralysis local patches of atrophy of the testes with dense fibrosis occurred in many of the cases examined, but with very few exceptions, in a large number of cases, active spermatogenesis in all stages was found in spite of intercurrent disease. The atrophied patches were due either to gonorrhœal epididymitis or localised syphilitic inflammatory affection of the testes. The dense white fibrous patches microscopically examined exhibited tubules consisting of thickened basement membrane without Sertoli cells or spermatogenic cells of any kind. The atrophic process was due to a regressive atrophy, as in dementia præcox. This, moreover, was shown to be the case by the fact that normal tubules with active spermatogenesis and Leydig cells could be found in the midst of the atrophied tubules. In spite of this secondary atrophy which affects the testes of many paralytics, the average weight of the pair after removal of the epididymis and tunica vaginalis is 8 grammes heavier than the testes of dementia præcox; whereas in the majority of cases of dementia præcox examined an emulsion of the testes revealed no spermatozoa, the converse was found in paralytic dementia.

In 27 cases of dementia præcox of which the testes were examined, either a commencing, a partial, or a complete primary regressive atrophy was evident by the morphological and micro-chemical changes in the spermatogenic epithelial cells and the interstitial cells, with a corresponding thickening of basement membranes and overgrowth of interstitial connective tissue. With a few exceptions these testes of dementia præcox cases showed less evidence of active spermatogenesis than the testes of an old senile case aged 81 at death. In 27 per cent. of the cases the interstitial cells showed the pigmentary degeneration found in old age.

Circulating Toxins.—I have no time to deal with the very important question of the influence upon the germ-plasm of circulating toxins in the blood. But the study of the testes of 100 cases dying of all forms of disease, and yet, except in dementia præcox and imbecility, showing with very few exceptions active spermatogenesis, appears to me to find a solution in the fact that a barrier of lipoid granules, similar in chemical composition to the lipoid granules in the cortex adrenalis, was found. These granules consist of a lecithin-cholesterin ester. The cholesterin acts as an antitoxin. Now I found in cases of microbial toxæmia that the lipoid-cholesterin ester disappears from the cortex adrenalis, and some people speak of this gland as antitoxic in function on this account. It seems to prove that Nature will provide as long as it can for the protection of the germ-plasm. There is evidence to show that these lipoid granules are connected with oxidation processes, and would therefore protect the germ-cells against poisons like alcohol circulating in the blood. Whereas in general paralysis clumps of eosin-stained cells could be seen in sections of the testes with a low-power magnification, in the great majority of cases of dementia præcox eosin-stained clumps were not visible; the appearances suggest a failure of these interstitial cells to maturate. Fibroblasts and dense fibrous tissue tend to replace the Leydig cells. It is less easy to show the regressive atrophy in the ovaries for various technical reasons, but the study of 100 patients dying in hospitals and asylums led me to the conclusion that there is, similarly to the male reproductive organ, a tendency to regressive atrophy of the reproductive organs in the female in dementia præcox, as evidenced by the deficiency of the chromatin in the nucleus of the primordial follicles, their disappearance and replacement by fibroblasts. The organ shows a sclerotic condition even in many young women suffering with this disease.

A CASE OF ACUTE DEMENTIA PRÆCOX DESCRIBED.

To the first volume of "Libro en Honor" of Ramon y Cajal I contributed a paper upon the Genetic Origin of Dementia Præcox, giving the clinical history and pathological findings in the brain and reproductive organs of a case of acute dementia præcox. The following is a summary:—

> There was a family history of insanity on both sides. A brother died in Charing Cross Hospital from a self-inflicted bullet wound of the brain. The testes were sent to me in 1916, as I had asked for the testes of cases dying of injury; pronounced regressive atrophy was found. I put them aside, after finding they were very abnormal, and forgot all about them. Five years later I was asked to see a case at Claybury Asylum of acute adolescent insanity, and I was struck by the patient's name and by the history of the brother having died from a self-inflicted bullet wound. I then recollected the name and recognised that it was that of the brother who had died in Charing Cross Hospital. There was a history of a sister who had been admitted four times to an asylum with manic-depressive insanity with sexual delusions; a brother and sister were normal; all the five were highly intelligent. The blood and cerebro-spinal fluid examined during life were both sterile; and there was only slight leucocytosis. The patient died 11 days after admission. The duration of the mental symptoms was about two months; they were characterised by depression, suicidal tendency, and delusions of persecution. He died of heart failure with cerebral congestion and œdema. The testes, freed from tunica vaginalis and epididymis, weighed only 8 g. each, which is less than half the normal weight. They presented a uniformly grey instead of a white appearance, quite like the organ in advanced cases of dementia præcox. The microscopic appearances of regressive atrophy were in all respects a counterpart of those I had found in the testes of the brother. Sections of the testis revealed tubules in all stages of primary regressive atrophy. Some of the tubules showed only a thickened basement membrane lined by Sertoli cells without any spermatogonia or spermatocytes; in others there were all stages of regressive degenerative atrophy of the spermatogenic epithelium, shown by a diminution or even absence of nuclear chromatin in spermatogonia, spermatocytes, and spermatids. Where spermatids or spermatozoa were seen there was evidence of a micro-chemical or morphological change similar to the condition I have found and described in other early cases of dementia præcox. The interstitial tissue displayed an overgrowth of fibroblasts, the cells of Leydig were diminished in size and numbers, the nuclei of the cells were deficient in chromatin, smaller than normal, irregular in shape instead of round, the cytoplasm was deficient in eosin-staining substance, and the appearance of the cells generally was that of a regressive atrophy. Pronounced nuclear and cytological changes were found in the cortical neurons generally, but the small stellate cells of Cajal were particularly affected.

The microchemical and morphological changes of the nuclear material of the cortical neurons and of the testis in this case indicate an hereditary biochemical deficiency of nuclear material in two structures essential for the preservation of the individual and the species. It has been asserted that the nuclear changes in the reproductive organs and the cortex of the brain in this disease are due to tuberculosis. In neither of these two young men was there any evidence of tuberculosis, but a strong family history of mental disease on both paternal and maternal sides.

CORRELATION OF DEMENTIA WITH PHYSICAL CHANGES.

In general paralysis the degree of dementia can be correlated with the degree of decay and degeneration of the cortex caused by the spirochætal infection and the escape of toxins into the cerebro-spinal fluid. There is a proportional extent of chronic inflammatory change, thickening and adhesion of membranes, and atrophy of the convolutions, obvious to the naked eye and sufficient to account for the loss of mind. The parallelism is shown in the fact that if there is well-marked speech defect the left hemisphere will weigh usually 20 to 40 g. less than the right. Chance is everything, hereditary disposition nothing, in this disease. There is chance of the individual being infected, but only 5 per cent. of those infected owing to colonisation of the spirochæte in the brain suffer from general paralysis. Likewise chance is everything in the juvenile form due to congenital syphilis.

In dementia præcox the macroscopic appearance of the brain exhibits nothing abnormal, and even microscopic examination shows little. How can the mental symptoms, then, be correlated with the microscopic changes found in the cortex? Before considering this matter more fully let me state what are the fundamental symptoms of dementia præcox: they are a weakening of judgment, of attention, of mental activity, of creative ability; the dulling of emotional interest; loss of energy; and, lastly, the loosening of the inner unity of psychic life. The biological view I take is that there is an inherent defect in the fertilised ovum, which shows itself in later life in two structures connected with the primal instincts of self-preservation and preservation of the species, and in those very structures where active nuclear formative processes take place—namely, the cortex cerebri and the reproductive organs. The brain does not waste in dementia præcox because the axon remains alive and the white matter surrounding the axon does not degenerate. Now the grey matter of the cortex, where all the essential chemico-physical processes take place, according to Donaldson, does not amount to more than one-fiftieth part of the white matter of the cerebrum. Yet if there is functional or structural synaptic dissociation there will result a corresponding failure of psycho-physiological processes and disintegration of the psychic unity according to the nature and degree of dissociation. Accordingly, to the naked eye, the brain may appear normal, and even microscopic investigation may not disclose in many cases (where the mental symptoms are mainly due to suspension of function) histological changes sufficient to account for the symptoms, as in manic-depressive insanity, where the patient returns to normal mentality.

Genetic Inadequacy.

How can we explain the dissociation (schizophrenia) from a physiogenic point of view? I should say by genetic inadequacy—namely, an inherent defect of the vita propria of the neurons, especially of those developed from the telencephalon. This portion of the neural tube is the latest to develop phylogenetically and ontogenetically. The countless millions and millions of neurons which constitute the cortex of the cerebral hemispheres have developed from relatively a very small portion of the original neural blastema. At birth further neuronic formation ceases, and further formative activity consists only in growth and extension of nerve-cell processes. This continues until at 2½ years the brain has attained a size nearly two-thirds of that of the adult. After this growth proceeds slowly until adolescence. There may be a varying amount of prenatal complete arrest of neuronic development, affecting especially those neurons of the highest level which are of evolutionary latest development—namely, the supragranular layer of pyramids—and various grades of amentia may be the result. There may be various degrees of partial arrest of growth and extension of the dendrons, by which there is only incomplete synaptic junction of many neurons of the highest evolutional level. Such a condition may lead to a failure in the highest level of control without much morphological evidence of a mental defect.

Lastly, there may be an inherent lack of durability of the neurons by which they are incapable of performing their functions of storage and transformation of energy during the life of the individual. In normal physiological conditions the neurons should be capable of functioning as long as the whole organism lives. Through an inherent defect they are apt to fail to function at the critical periods of life—namely, adolescence, the climacterium, and senescence; physiological conditions of stress—gestation, parturition, and lactation—may occur in the female. Again, such causes of psychological stress as emotional shock, repression and frustration of the sex instinct, causing endocrine disturbance and insomnia, are exciting causes of the onset of disordered functions of the highest level of neurons. If a deficiency of thyroid secretion can arrest structure, and thereby function, producing cretinous idiocy, it is not surprising that a deficiency of thyroxin in the blood should cause slowing of nervous function when the growth of the neurons is completed. But the thyroid gland's function is correlated with the whole reproductive endocrine system.

A noticeable histological feature in the brains I have examined of cases of dementia præcox is a morbid change in the nucleus. This change was first described by Nissl as occurring in the cortical cells. It was later described by Alzheimer and by most investigators since. It shows a swelling with often irregular infolding of the nuclear membrane, and deficiency or absence of the basophil staining of the intranuclear network by Nissl stain. In the light of recent researches on the chromosomes in relation to heredity this defect of nuclear chromatin, which occurs also in the reproductive organs, suggests a primary genetic defect. Now the nucleus of the neuron plays undoubtedly an important part in the function of transformation and discharge of energy from the cell. Although the Nissl granules are artefacts and do not exist in the living cell, yet their presence in the body of the cell and dendrons, and the microchemical reaction they give—showing that they contain phosphorus and iron—indicate that in the living neuron there is a continuous interaction between the surface of the granules and the nucleus by the mediation of the cytoplasm.

There is evidence that the granules which are contained in the body of the living neuron and its dendrons, but not in the axon, may form an oxygen surface, and that the iron of the nucleus may act as a catalase; now if there is a nuclear failure, as histological observations show, this may account for the neurons being unable to transform and discharge energy along the axon. The neuron is still able to live and its axon is not wasting, therefore the brain does not waste. How, then, can we associate this evidence pointing to a defect in the specific functions of the evolutionally latest and highest developed level of the brain with the philosophical teaching of Hughlings Jackson? The latter, in his discourse on the Factors of Insanity, points out that positive symptoms such as illusions, hallucinations, and delusions, which are so frequently met with in this disease, are evidence of functional activity brought into relief by the negative condition of the highest evolutional level.

What, then, is the original cause of this abnormal variation in the inborn vis propria of the fertilised ovum? It has been suggested that syphilitic antecedents may be the cause of dementia præcox, but I have been unable to find proof of this after examination of the cerebro-spinal fluid of a large number of cases of dementia præcox. It is a fact that these diseases do occur in primitive peoples, only the symptoms, such as hallucinations and delusions, are coloured by social usages, customs, and beliefs.

Tendencies Inborn and Acquired.

Lastly, from a practical consideration of the subject of insanity, it is very necessary to recognise that the germ-cells of every person who is certified as insane and sent to a mental hospital are not necessarily possible potential transmitters of a mental disease. General paralysis of the insane and many other microbial infections leading to disordered mental functions are acquired diseases and are not hereditary. Neither is it right to assume that simple senile decay affecting the brain is transmissible, yet a large percentage of inmates of asylums are sent there on account of senility. These legal administrative conceptions of mental disease must therefore vitiate all statistics in respect to heredity as a cause of mental diseases, because based upon data in which admissions to a mental hospital are in many instances the sole evidence.

This does not apply to the same extent to carefully recorded pedigrees; but even these are not free from error, for often all the information that can be obtained is that one or more members of the stock had been in an asylum. How is the public to know the difference between an inborn tendency to insanity *ab initio* in the ovum, true heredity, and a condition which may arise after conjugation of the male and female germs while the developing embryo is still in the body of the mother? As Sir Bryan Donkin pointed out, congenital disease was confounded with hereditary disease even by medical witnesses who gave evidence before the Royal Commission on Feeble-mindedness. The term "hereditary syphilis" is a misnomer. Much may happen while the embryo is still in utero. The normal biological processes of nutrition of the developing embryo may fail; abnormal mechanical conditions may arise in the uterus, interfering with the proper development of the embryo; or mechanical conditions in the process of development of the embryo may arise, interfering with the development of structure. Of all the structures in the body of the embryo likely to be affected by a departure from normal dynamic biological conditions of growth, the great brain or cerebrum is the most likely. The neo-encephalon—new brain—of mammals appears first as two hollow buds from the telencephalon, which by rapid cellular proliferation grow upwards and backwards to cover up completely the basal ganglia and mid-brain to form the cerebral hemispheres. In that process many mechanical failures and accidents may occur, interfering with the vascular supply or nutrition of the rapidly proliferating cells, whereby the process may be arrested altogether, as in anencephaly, or partially arrested, as in the brain of the idiot or low-grade imbecile.

There is evidence of a possible vascular cause through a lack of correspondence in the normal rate of growth of the dura mater and soft membranes and the growth of the brain. Owing to this the veins enter the longitudinal sinus in a direction opposite to the current of the blood-stream in the frontal lobes—an anatomical condition which favours venous stasis. This I have put forward as an explanation of the fact that the frontal lobes are the seat of early and most pronounced meningo-encephalitis and atrophy in paralytic dementia, because the spirochætes, being anaerobic, would develop more easily where there is venous stasis. Again, prolonged labour and difficulties in delivery requiring the use of instruments may be responsible for injury of the brain. Idiots and imbeciles occur in all grades of society (frequently they are the first-born), and it is not at all uncommon to find nothing in the paternal or maternal family history—even when a pedigree can be obtained of three or four generations—to account for this pronounced failure of development of the anatomical basis of mind. The late Dr. Henry Ashby considered that 25 per cent. of the cases of idiocy and imbecility were due to other causes than heredity.

Cameron Lectures

Delivered at the University of Edinburgh on Oct. 19th, Oct. 20th, and Oct. 22nd, 1925,

BY HARVEY CUSHING, C.B., F.R.C.S. ENG.,
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LECTURE I.*—THE THIRD CIRCULATION AND ITS CHANNELS.

> " Cet enfant a de l'eau dans la tête, dit le vulgaire ; cet enfant est hydrocéphale, dit gravement le médecin, répétant littéralement par un mot grec ce que dit l'ignorant dans sa propre langue. Mais quelle est cette eau ? d'où vient elle ? Voilà ce dont les médecins auraient dû s'occuper."—*François Magendie, 1842.*

As a tribute to the memory of François Magendie, I propose to devote the first of these lectures to the subject of the cerebro-spinal fluid, for just 100 years have passed since the appearance of the earliest of his epoch-making publications in which attention was drawn to the physiological importance of the peculiar watery medium which bathes the central nervous system.

Something of the state of our knowledge before Magendie's time may be gathered from a paper (1768) on Dropsy in the Brain by the celebrated Robert Whytt, one-time professor of medicine in this university, wherein is given the first recognisable description of what must certainly be tuberculous meningitis.

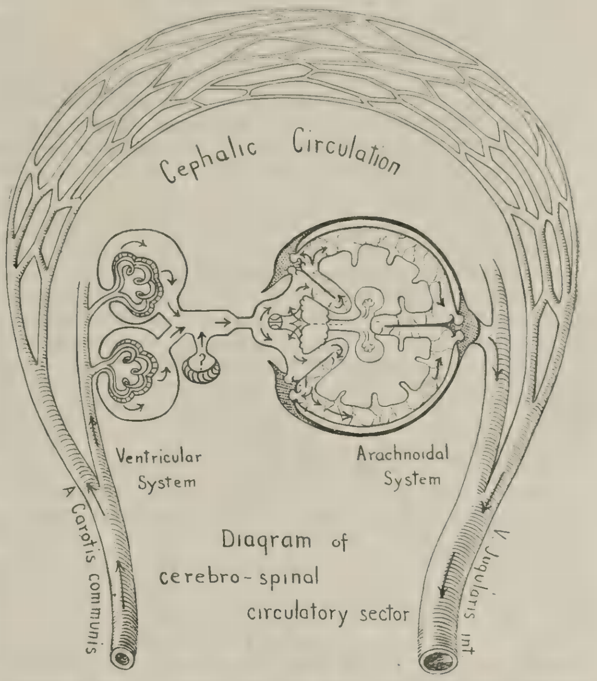
> " The immediate cause of this disease," he says, " and indeed of every kind of dropsy, is always the same—viz., such a state of the parts as makes the exhalant arteries throw out a greater quantity of fluids than the absorbent veins can take up."

But Whytt, though a man ahead of his time, could have had no possible conception that the cerebro-spinal liquor was a specialised medium with a peculiar circulation of its own. And as my chosen title indicates, it is this particular feature of the fluid—namely, its circulating character—that I wish to emphasise, and I shall have less to say about its biochemical and cytological characteristics in health and disease, so thoroughly studied by many, than about the channels through which it percolates.

THE FLUID AND ITS CONFINES.

On Movement in a Circle.—It is quite evident that Magendie, who believed the fluid was secreted by the pia, much, for example, as pericardial fluid is secreted, had no idea of its movement as other than an ebb and flow. And this truly Galenic conception of a cerebro-spinal fluid circulation still holds in most modern text-books of physiology, even though Key and Retzius gave a hint of the actual state of affairs by demonstrating the continuity of the fluid-holding leptomeninges as distinct from the subdural space, and by suggesting (without satisfactory proofs, to be sure) that the granulations of Pacchioni represent portals through which the fluid passes from the arachnoidea into the large meningeal sinuses. . . .

FIG 1.



On the whole, it would appear medical students get little information about the fluid as a circulating medium in their course in physiology, and what they get is mostly wrong.

This curious neglect of a vascular system which teems with biophysical problems can only be explained on the grounds that the subject of intracranial dynamics is one of the few on which Carl Ludwig, the father of modern physiology, did not focus his fertile mind, and his pupils unto the third generation have followed suit. . . .

That the arterial and venous blood has " a motion as it were in a circle," in contradistinction to the Galenic idea of an ebb and flow, was the conception, when put to proof, by which the immortal Harvey transformed medicine. For even though the idea, from the heart around and back to the heart, was not entirely new, at least so far as the lesser pulmonary circulation is concerned, it was a view against all authority, and in the case of Servetus was burned with its author at the stake.

But the existence of another fluid besides blood which " circulated " was soon suggested by Aselli's discovery of the lacteals, and Picquet's of the thoracic duct; and finally William Hunter, or was it again your Monro secundus, who first postulated that the lymphatics represented a system of absorbent vessels which were supposed to conduct the watery constituents of the tissues ? To be sure, the movement of the chyle and lymph, under this conception, is not actually in a circle in a strictly Harveian sense, but rather in what one might describe as across a sector of the blood circle. And the same is true of the cerebro-spinal fluid which proves to be in continual movement, in a definite direction, through a highly specialised pathway, that cuts across the blood circle to envelop an organ in which a lymphatic apparatus of the usual type does not exist (Fig. 1).

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* Lectures II. and III. will appear in subsequent issues of THE LANCET. They are slightly abridged for issue in our columns, and will be published shortly as a small volume, dedicated to a group of young collaborators.—ED. L.

In Explanation of Hydrocephalus.—Though these matters which concern the brain en masse may have failed to intrigue the attention of physiologists, they have been, if anything, of even greater interest and concern to the neurosurgeon than the localisation of function, since the success or failure of many of his undertakings depends more upon his familiarity with the fluid circulation and its possibilities as a complicating factor in his procedures than upon any other one thing. For the fluid, indeed, may prove his most stubborn enemy or his most valued ally. . . .

My own interest in the dynamics of the intracranial chamber was first aroused while engaged 25 years ago in the Hallerianum in Berne on a problem suggested by the late Theodor Kocher, who was preparing a monograph on cerebral compression for Nothnagel's "Specielle Pathologie" (1901), wherein he laid far more stress on the results of my researches during that happy year than they perhaps deserved.

On my return to Baltimore, with the intention of specialising in the surgery of the nervous system, among the first of my patients—as will probably have been true of most young men entering this particular field—were infants with what is known as essential hydrocephalus, for which a greater number of treatments have as yet been advocated than successes recorded ; indeed, if there are any clear-cut successes recorded. I had only the vaguest possible ideas of the cerebro-spinal pathways ; and if Leonard Hill's statement, made in the course of his admirable Hunterian lectures in 1896 were true—" That no pathological increase of cerebral tension can be transmitted to the cerebro-spinal fluid, because the fluid can never be retained in the meningeal spaces at a tension higher than the cerebral veins "—I could not understand how it was that a fluid which acted chiefly as a water-bed for the brain could give surgeons so much trouble, and so determined to find out something more about it if that were possible.

One of my early co-workers in the Hunterian Laboratory in Baltimore, Dr. Lewis L. Reford, undertook to study the development of the leptomeninges by injecting India ink under light pressure into the spinal canal and into the spinal subarachnoid spaces of living pig embryos of various ages. After the tissues had been "cleared" so that the course of the injection-mass could be observed, it was found that in the younger embryos fluid introduced into the canal passed headwards into the ventricles from which there was no escape ; that later on, whether injected into the canal or into the subarachnoid space, the mass would spread from the region of the fourth ventricle around the base of the brain ; and, finally, that in older pigs it would extend up over the hemispheres in what appeared to be developing meningeal spaces which had no connexion with the extracranial lymphatics. . . .

With this small beginning, and without any definite sequence, a variety of studies were undertaken during the next few years, which were merely along by-paths to the actual goal we continued to bear in mind—namely, furtherance of our knowledge of the mechanism of hydrocephalus, of which there probably were many kinds. Numerous examples of this most distressing condition in infants had meanwhile come under observation in the clinic, and it was found that in most of them the fluid could be withdrawn from the ventricles by lumbar puncture. Moreover, when a needle attached to a manometer was inserted through the bulging fontanelle into the ventricle and another in the lumbar sac, the pressure level of the fluids in both usually remained the same and fluctuated equally with crying, straining, or jugular pressure, as well as on the withdrawal of fluid from either end of the system. At the same time we observed, as many others doubtless have done, that even though large amounts of fluid might be withdrawn—as much as a completely collapsed fontanelle would permit, and amounting at times to over 300 c.cm.—within 24 hours the fluid would have reaccumulated, albeit with slightly altered chemical and cellular characteristics, and perhaps with slightly increased tension.

From these simple clinical tests I became convinced that some fault of development in the portals of outflow for the fluid from the meningeal spaces, or their occlusion by disease, was more likely to be the cause of hydrocephalus in infants than either an acquired obstruction to the passage of fluid from ventricles to the subarachnoid spaces, or a "block" somewhere in the course of these mesh-like though abundant channels. . . .

As we knew nothing at this time about the portals of drainage other than that Key and Retzius had associated them in some way with the Pacchionian bodies, structures not demonstrable in infants, and being then under the impression that some of the fluid, as maintained by many, normally escapes into the extracranial and extraspinal lymphatics which might therefore be utilised as pathways for absorption, the attempt was made to drain the subarachnoid lumbar fluid directly into the retroperitoneal tissues through a trephine opening in the body of the fifth lumbar vertebra. It was thought that this loose tissue in direct proximity to the thoracic duct would be a medium more favourable for permanent drainage than the subaponeurotic layer of the scalp which had been previously utilised for the purpose with disappointing results. . . .

Baffled in this, which proved to be a futile procedure, and believing that somehow or other in curing hydrocephalus the fluid must be allowed to get directly into the venous circulation, attempts were made to accomplish this by Dr. R. D. McClure who, as an improvement on the method of Payr, essayed to transplant a vein between the subdural space and a vessel in the neck ; and by myself, with the placement of a specially devised silver tube which led from the dilated third ventricle through the corpus callosum directly into the longitudinal sinus. As in most other surgical experiences with "essential" hydrocephalus the results were inconclusive, but the observations at least taught us that no blood subsequently passed from the sinus into the ventricle, which was regarded as an indication that the tension of the fluid must at all times be greater than that in the veins.

Filling Gaps in our Knowledge.—These early endeavours all tended to show how imperfect was our knowledge of the source or sources of fluid supply, and of the method whereby it was absorbed. In other words, too much attention had been paid to the bath itself and too little to the tap, to the construction of the tub as a container of the bath, and to the place and mechanism of its outlet. Accordingly, on my transfer to Boston in 1912, Dr. Lewis H. Weed and I set ourselves to these problems, and the following questions for which we needed answers were gradually formulated.

> Granting that the choroid plexuses are the chief source of the cerebro-spinal fluid—and this has not been conclusively proved—is the process, as some believe, a transsudation, or a secretion, or as Mestrezat regards it, a mere dialyzation from the blood ? What conditions activate and what conditions inhibit these choroidal glands ? Have they an internal as well as an external secretion ? To what primary diseases are they subject ? How early in embryonal life do they secrete ? Why does the fluid which they elaborate differ so greatly from that secreted by most other glands ? Why are the cells so impermeable to the passage from the blood-stream of drugs and of substances such as the bile pigments, which in conditions of jaundice quickly stain all other body tissues and fluids.

> Granting that the fluid thus secreted by the choroid plexuses leave the ventricles and spreads over the brain and down the cord in the subarachnoid spaces, does it receive accessions from elsewhere, from the ependyma or from pituitary or pineal glands ? Are there lymph channels in the brain, and if not, how does the central nervous system dispose of its products of tissue waste ? If there are [anything comparable to] cerebral lymphatics do they discharge into the subarachnoid spaces, and is the subarachnoid fluid therefore of the same character chemically, physically, and

cytologically as the ventricular fluid? Why normally is the fluid practically limited to the subarachnoid spaces, and under what conditions does it become subdural?

Granting that fluid may escape by way of the Pacchionian granulations, is this the chief or only manner of escape? If an important avenue, why are these structures lacking in the lower animals and in the human infant? Are these granulations, therefore, pathological processes, and, if so, what are their precursors? Are there other means of fluid absorption along the nerves by way of the lymphatics, and, if so, how important are they? How do the spaces in the pia-arachnoid develop, and do the choroidal glands mature and secrete before or after their formation? Are there faults of development at these meningeal outlets for fluid which can account for congenital hydrocephalus and for malformations such as spina bifida and cephalocele? Are there analogies in the fluid circulation of the eye to which we may attribute the disturbances of circulation of the intra-ocular fluids?

It so happened that we came to attack these questions in reverse order, "upstream" as it were; and instead of beginning with the plexus, though this was not wholly neglected, attention was first paid to the portals of exit. Dr. Weed soon hit upon a satisfactory method of identifying these structures, which was free from the objections raised against those employed by his predecessors. This consisted of a long-continued subarachnoid injection in the living animal, of potassium ferrocyanide and iron ammonium citrate in isotonic solution, under a pressure but slightly above the normal, with the subsequent immediate fixation of the tissues in an acid medium. This procedure, which served to precipitate Prussian-blue granules out of the foreign salts introduced in solution, made it possible to utilise histological methods to identify the situation of the granules in the tissues and tissue spaces.

To shorten a long story, it was found that the fluid had passed through the mesothelial cells which cap the arachnoid villi that project in large numbers through the dura into its many venous sinuses, large and small, in all parts of the cranial chamber. This, broadly speaking, was confirmatory of the view of Key and Retzius, but it substituted these innumerable and widely disposed microscopic structures for the Pacchionian granulations to which they had ascribed the function of drainage, and which merely represent pathological enlargements of some few of the villi. . . . With this substitution of countless microscopic arachnoidal villi for the occasional Pacchionian granulation as the essential portals of escape for the fluid, our conception of the process of absorption was greatly clarified; and Weed's subsequent demonstration of the ease and certainty with which a chronic hydrocephalus of high grade may be experimentally produced by the simple injection into the subarachnoid channels of lamp-black, which serves to occlude the arachnoid villi, would seem to make it most probable that damage or imperfect development of these structures is the most common cause of otherwise unexplained cases of early or congenital hydrocephalus.

The Perivascular Channels.—But to return to the views of others in regard to the process of absorption. In a study of the brains of animals subjected to experimental anæmia, Frederick W. Mott had observed that the perivascular "lymphatics" of Robin (better known to pathologists as the Virchow-Robin spaces), which represent prolongations of the leptomeninges around the vessels that dip into the brain substance, were particularly well shown (Fig. 2). These observations led him to conclude that absorption of the fluid from the subarachnoid spaces normally took place by way of these "lymph" channels with the natural corollary that the cerebral capillaries represented the chief absorbent vessels. This same view, if I read him aright, came to be held by E. F. Goldmann and is set forth in his classical monograph (1913) on vital staining of the central nervous system.

It may be assumed that both pathologist and anatomist are talking of the same thing when the one mentions the perivascular spaces of Virchow and of Robin, and the other the space of His. However, all three of these distinguished investigators originally gave such casual descriptions of the spaces in question that it is surprising that they should have become eponymic. . . . One might naturally suppose, since the superficial vessels of the brain and cord lie within the subarachnoid space, that they would carry down with them only a sleeve of pia, but as a matter of fact the so-called pial vessels of the surface, like the trabeculæ within the subarachnoid spaces, are, as Weed has clearly shown, covered by an endothelial lining. Hence, the perivascular sleeve is necessarily a double one, and there can be no question but that the space enclosed, whatever its function, lies in direct communication with the subarachnoid spaces; nor can there be any doubt as to its having a "visceral" (vascular) lining of arachnoid and a "parietal" (nervous) lining of pia rather than that, as generally conceived, it is formed by a sleeve of the pia alone which lies adjacent to the limitans glia.

FIG. 2.

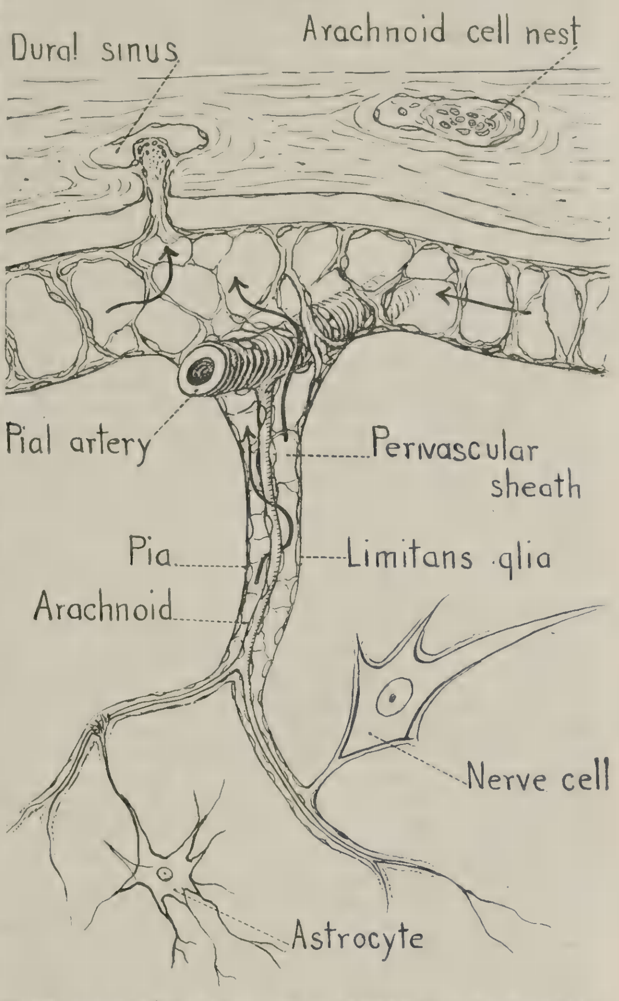

Diagram to show the sleeve of pia-arachnoid constituting the perivascular space surrounding a branch of a pial artery (modified from Weed).

But to return to our personal story. Under the condition of Weed's earliest experiments, no deposit of Prussian-blue granules was found in these perivascular spaces unless the animal were bled during the course of the injection. However, our interpretation of these facts was contrary to Mott's, for to us it seemed more probable that the normal flow in these channels should be from the brain towards the subarachnoid spaces rather than the reverse as he had assumed; and it was even then beginning to be known that these perivascular spaces become packed with cells in many disorders affecting the brain, which accounts for the early pleocytosis in the fluid.

Light on the Monro-Kellie Doctrine.—In further explanation of the direction of flow in these perivascular spaces, we must revert to the doctrine first formulated by your Monro secundus, but properly known as the Monro-Kellie doctrine, since it was further elaborated some years later by another Scotsman, Dr. George Kellie, of Leith. According to this doctrine, which introduces certain principles of physics relative to the flow of fluids through an incompressible retainer, the contents of the intracranial chamber with its three elements, nervous tissue, blood, and fluid, must always remain the same in bulk. Any increase in blood volume, for example, can only take place at the expense of one of the other elements, and conversely a diminished blood volume must be compensated either by an expansion of the brain or by an increase of cerebro-spinal fluid which probably amounts to the same thing. Hence, if an animal is bled and the brain in consequence shrinks in size, it becomes, as Weed termed it, a "thirsty brain," and the additional fluid which must necessarily be provided to compensate for the shrinking becomes sucked down into the perivascular channels.

Moreover, since these changes all take place rapidly—a matter of minutes—it is hardly possible that the great increase of fluid which the process entails could be the result of mere transudation. George Kellie was close to the facts a century ago when he said, in speaking of the effect of cerebral anæmia, that "watery effusion within the head is a pretty constant concomitant or consequence of great sanguineous depletion."

All this is part and parcel of the extraordinary phenomenon of cerebral œdema, for the brain, owing to its sponge-like structure, is apparently more capable than any other of the body tissues of taking up fluids with an enormous and rapid increase in its bulk; and it was, perhaps, through some such sequence of ideas that Dr. Weed, with his own pupils in turn, a few years later, while in charge of an experimental laboratory during the war, made the discovery that prompt changes in brain volume ensue upon the intravenous injection of hypertonic and hypotonic fluids. This discovery not only has served to provide a new method of attack on many old problems associated with the Monro-Kellie doctrine, but it has proved in the clinic to be a veritable boon for certain desperate states.

The practical applications of the discovery were obvious, and they were immediately pounced upon for therapeutic purposes. In the first place, it was apparent to the physician that drugs like salvarsan, to which the choroid plexus was impervious, might be brought more intimately in contact with the nervous tissues owing to the probable reversal of the current in the perivascular channels when the brain was shrunk by hypertonic solutions. The surgeon, on the other hand, promptly adopted the procedure as a means of lowering intracranial tension; and it is truly amazing how rapidly certain patients in deep stupor, even with Cheyne-Stokes respiration, may be brought back to consciousness after the intravenous administration of a hypertonic solution. . . .

Development of the Arachnoidea.—But I am getting far ahead of my story. Having proved to our satisfaction how it was that the fluid became absorbed, Dr. Weed on his return to Baltimore proceeded, as I have expressed it, to work "upstream," and ere long completed his extensive and now classical monograph on the development of the meningeal spaces. These spaces, as he convincingly demonstrated, are produced by a seepage through the roof of the fourth ventricle of fluid which permeates and breaks down the perimedullary mesenchymal syncytium. This occurrence practically coincides, as we had anticipated, with the development of the choroidal tufts, and supposedly therefore with the initial flow of cerebro-spinal fluid which comes to supplement the stagnant pre-existing fluid, for the undifferentiated cells of the ependyma up to this time may be assumed to have a secretory activity of some sort.

These illuminating studies of Dr. Weed's not only confirmed but greatly amplified the observations made by Reford ten years before. They serve to show with some finality: that at about the fifth week of embryonic life fluid begins to percolate through the remaining fragment of the roof plate overlying the fourth ventricle; that it finds its way through leptomeningeal channels which are thereby formed in the mesenchyme; and finally, that it escapes by way of persisting leptomeningeal communications, the villi, that project through the dura into its major venous sinuses. All of which assuredly indicates the birth of an actual circulation under the pressure of a secretion.

Meanwhile, in 1913–14 W. E. Dandy had been pursuing his ingenious studies of experimental hydrocephalus in association with Kenneth Blackfan, and though our ideas, as stated, differed from theirs in regard to the process of absorption, Dandy succeeded in making two notably crucial experiments which filled gaps in our previous knowledge. One of these was the demonstration that ventricular hydrops would occur if an inflammatory reaction were set up so as to encircle the cerebral peduncles at the level of the tentorium, which goes to show that the major course of the fluid, after its emergence from the foramina of Magendie and Luschka, is upward by way of the arachnoidea through the incisura tentorii to bathe the cerebrum.

The other of his crucial experiments relates to the actual source of the fluid concerning which, from lack of exact proof, doubts have frequently been raised. In the spring of 1911 I had had a most suggestive surgical experience with a patient[1] who had a unilateral hydrocephalus due to a cystic intraventricular tumour arising near and occluding the right foramen of Monro. After two unsuccessful efforts to give pressure relief, the ventricle, which proved to be filled with xanthrochromic clotting fluid, was opened, emptied, and the choroid plexus laid bare. From the naked plexus thus exposed, fluid could be seen to be freely exuding, but when a silver "clip" was closed on the entering choroidal artery the organ became blanched and the secretion apparently ceased. The plexus was then excised, but unhappily the patient succumbed to a subsequent attempt to remove the tumour.

In his laboratory experiments Dr. Dandy was more fortunate in his demonstration that when one foramen of Monro is occluded a unilateral hydrocephalus results, whereas if the plexus is removed coincidentally the ventricle remains collapsed. This observation could hardly leave doubt in the mind of the most sceptical that the plexus is the active spring whence the river of cerebro-spinal fluid arises, whether the actual process be one of filtration, secretion, or dialyzation. There hardly seems need of belabouring the argument further, yet Weed has recently added additional evidence by his demonstration that after the intravenous injection of hypotonic solutions, which greatly augment the amount of cerebro-spinal fluid, the choroidal cells show histological evidence of its passage into the ventricles, even though this may not be a reversible process when hypertonic solutions are injected. . . .

Hydrocephalus therefore may apparently be produced in at least three major ways: (1) by occlusion of the villi through which the fluid is normally absorbed into the sinuses (and, as a corollary, extensive sinus thrombosis, should it be compatible to life, would have the same effect); (2) by obstructions easily produced by inflammation or tumour in the narrower portions of the pathway, notably at the foramina of Monro, in the aqueduct, at the fourth ventricle, and in the narrows of the incisura tentorii; and (3) more rarely, by an increase in the amount of fluid secreted in excess of what can be cared for by the normal portals of absorption; and this is what, hypothetically, would take place could the hypotonicity of the blood, under the conditions of Weed's experiments with the injection of watery fluids, be long maintained.

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[1] Johns Hopkins Hosp. Surg., No. 27733.

In connexion with these meningeal channels there remains to be discussed another matter, the importance of which has only been stressed of late years—namely, the physiological activity of the cells which constitute the lining of the fluid pathway. Now it is a remarkable thing, if one stops to think of it, that Nature should have provided this watery fluid, which, on the general biophysical principle of diffusion, contains the salts and sugars of the blood, but practically none of its other elements. What could have been her reason for interposing in the blood-stream this peculiar circulatory switch with its choroidal barriers and impervious pia, which keeps the fluid free from practically all known substances, whether drugs or vital dyes, which may be put into the blood-stream? Unquestionably one purpose was to provide a medium for the washing out of products of metabolism—a substitute for a lymphatic apparatus if you will—for we have learned that the intraventricular and subarachnoid fluids have a slightly different chemical composition. Then, too, it seems not improbable that something may be added to the fluid in transit which may be necessary to the economy.

Vascular or lymphatic channels might well enough have served for both these purposes it would seem, and just why another medium had to be provided within spaces, which, as we shall see, are particularly intolerant of the presence of blood cells, remains unanswered. Moreover, as may be observed, there is no method whereby a collateral circulation for the cerebro-spinal fluid can be spontaneously established in cases of obstruction, and, since it passes through a very specialised pathway, it is to Nature's provisions to keep the pathway in repair and free from foreign substances which might obstruct the fluid outlets that I wish to devote the remainder of this hour.

THE CELLULAR LINING OF THE MENINGEAL PATHWAY.

The "Meningocytes" and Reparative Processes.—The mesothelial cells which line the extraventricular fluid spaces possess a most remarkable capacity for repair as must have been observed by many. I may give an example. The efforts which were made many years ago to drain the hydrocephalic ventricles by establishing a communication with the subaponeurotic layer of the scalp, in the expectation that the fluid would permanently escape into the lymphatic spaces, led to disappointments. For under these circumstances a very peculiar and striking thing happens. The scalp at first becomes widely œdematous, but in the course of a few days the œdema gradually subsides, and finally a circular pool of fluid a few centimetres in diameter is all that remains. This disc-like subaponeurotic pool, which continues in free communication with the ventricle, becomes promptly lined with a layer of glistening serosal cells, like those lining the dura, which are impervious to the further escape of fluid into the tissues.

Early in our surgical experiences with what is known as a subtemporal decompression a comparable observation was made—namely, that a new dural membrane would promptly re-form without any adhesions to the brain, provided the leptomeninges over the surface of the exposed temporal lobe were not injured in the process of opening the dura. This neo-membrane would so perfectly repair the defect over the bulging lobe that anyone who might happen after an interval to re-operate upon the patient or to conduct a post-mortem examination would be likely to doubt whether the pachymeninx had ever been opened. . . .

Practical applications have been made of this extraordinary capacity for the formation of neomembranes. For example, there is a common intracranial tumour (meningioma), to whose source of origin reference will subsequently be made, the removal of which often necessitates not only the leaving of a defect in bone but in dura as well, so that the scalp alone covers the raw and œdematous cortical area stripped of its pia-arachnoid. The natural consequences of this would be an adherent scar between scalp and brain, with practically no re-formation of membranes, or at best of very imperfect ones, for some fluid will naturally be exuded through the intact perivascular spaces which would encourage their formation. However, should a piece of gutta percha tissue ("protective") be placed over the raw area at the close of the operation, glistening serosal surfaces will form in the manner described in a surprisingly short time, a matter of days, perhaps of hours.

Before entering into a consideration of the particular cells which take part in these reactions there is something more to be said about the processes of meningeal healing in general. Much light has been thrown on the subject by the ingenious experiments of my former assistant, Dr. S. C. Harvey, and his co-workers, who have shown the futility of patching a dural defect by the transplantation of fat or fascia as is often advocated; for if the arachnoidea over the cortex remains intact, the dura will spontaneously re-form without adhesions, whereas should the pia-arachnoid and cortex have been damaged dense adhesions will form and incorporate the dura even though its inner surface has been uninjured. In other words, as Dr. Harvey puts it, "the inner surface of the dura does not act as a limiting membrane in the presence of an attempted repair in the underlying meninges, but, on the contrary, enters intimately into the process"; and he contends that there are not only morphological but actually functional differences in the two membranes, one of which merely lines a potential subdural space, whereas the other is a more highly differentiated structure.

My own explanation of the difference in the behaviour of the two surfaces to injury would have been that the arachnoid exudes fluid, thereby providing a space which, as we have seen, becomes promptly lined by cells that migrate from the mesenchyme to make a new membrane; the dura, on the other hand, does not exude fluid, and since there is nothing to keep the surfaces apart when the pia-arachnoid has been damaged, adhesions form. But Dr. Harvey has recently brought forward additional proofs in support of his view.

He conceived the idea that the cells of the leptomeninges might be derived from the same source as the sheath cells of the peripheral nerves, which arise, as R. G. Harrison had shown, from the embryonic neural crest, whereas the dura itself merely develops from the mesenchyme. Employing Harrison's methods he removed a bit of the cerebral hemisphere of one amblystoma embryo and transplanted it into the mesenchyme in the region of the fore-limb of another, where the explant during its subsequent growth came to be surrounded by an incompletely formed dura, but with no leptomeninx. On the other hand, when a portion of the neural crest was included in the explant, a choroid plexus developed and leptomeningeal spaces were formed in addition to the duraloid membrane of the control experiment. But here again we may have to consider the normal reactions of mesodermal tissues to the infiltration into them of cerebro-spinal fluid with the inevitable formation around the fluid spaces of a serosal membrane.

This brilliant contribution by Dr. Harvey to experimental embryology and to that much neglected part of it to which Weed had already contributed—namely, the embryology of the meninges—is extremely interesting and important from many points of view; but as a matter of fact we may be stretching matters in the endeavour to show differences between the endothelium of the vascular and lymphatic channels and of the mesothelium of the serous cavities and cerebro-spinal fluid spaces; for they all are but part and parcel of the circulatory apparatus as a whole. But even though the cerebro-spinal fluid channels appear to be lined by supposedly fixed pavement cells, certain specialised cells are found to lie here and there in clusters, notably in association with the villi, in nests incorporated within the fibrous mesh of the dura, and in the leptomeningeal stalk of the plexus. It would seem to me that Dr. Harvey's disclosure of the difference in origin of these cells from those lining the dura—the one being ectodermal in origin, the other mesodermal—is of particular significance. Let us for a moment consider some of the duties of these particular cells, which, merely because of their situation and in complete disregard of their histogenesis, we may for convenience call *meningocytes*.

Phagocytic Properties of the Meningocyte.—If the pathway for this specially elaborated fluid is as important as we are led to assume, there would certainly have been provided some method whereby its intricate channels could be kept clear of debris, especially of blood or inflammatory products of one kind or another which might get into the stream, for otherwise these foreign particles would inevitably be swept into the microscopic villi and effectually stopper them. The experimental observations in this direction have been mentioned in discussing hydrocephalus. Moreover, it is safe to say that the head of every infant is sufficiently traumatised during parturition to cause the extravasation into the fluid of red blood corpuscles, so that from the first moment of extra-uterine life the mechanism for absorption for the fluid may be seriously interfered with.

An effective method of keeping these microscopic pathways open seems to have been provided through the phagocytic activity of the meningocytes under the stimulation of foreign particles. This property was first noted, it seems, by Quincke, who found that cinnabar granules introduced in the fluid become engulfed by large phagocytic cells—the same cells that Goldmann subsequently found to be stained by vital dyes; but more recently it has been shown by Essick in Weed's laboratory that, though this reaction might be evoked by a great variety of substances, it was particularly pronounced after the subarachnoid injection of laked blood, under the stimulus of which the cells enlarge, become vacuolated, and detach themselves from their moorings to swim out as free macrophages into the cerebro-spinal current. Thus Nature saw to this need from the first, and the surgeon has only just tardily come to a realisation that she can be considerably aided in her purpose by the prompt and repeated withdrawal of bloody cerebro-spinal fluid. . . .

The *plasma cells* of Waldeyer, the *mastzellen* of Ehrlich, the *endothelial leucocytes* of Mallory, the *pyrrol-zellen* of Goldmann, the *amœboid macrophages* of Metchnikoff and Evans, the *polyblasts* of Maximow, the *histiocytes* of Aschoff, and the *clasmatocytes* of Ranvier (the term in most common use by American authors) are probably one and the same type of cell which possesses active migratory and phagocytic properties. But in regard to their source of origin, their relation to the phagocytic monocytes, and their capacity for transformation into more fixed cellular types when they have ceased their wanderings, there are divergences of opinion.

Maximow, for example, claims that the three cell types in inflammation have a single origin in the lymphocyte; Sabin and her co-workers, on the contrary, strongly favour the absolute specificity of the several cell strains; the Lewises are convinced that the macrophages (clasmatocytes) and the epithelioid cells are merely functional stages of the monocytes, but make their position somewhat less clear in regard to the origin of the fibroblasts; whereas Carrel states he has definitely seen amœboid macrophages become transformed into fibroblasts. The final decision in these matters unquestionably lies with the experimental cytologists who have already devised and will further perfect methods of studying living cells in tissue cultures which permit direct observation, not only of their behaviour and manner of division, but also of their specific reactions to vital dyes.

What to the surgeon is of greater concern than the genesis of the active meningocyte is what it may be able to accomplish not only as a scavenger but also as a reparative agent. Certainly when it comes to the prompt replacement of a dural defect, say of 30 square cm., by a neomembrane, it is inconceivable that the pavement cells could grow in from the edges; and since it is doubtful whether these fixed pavement cells are capable of further division, we must assume either that clasmatocytes or monocytes have wandered in from the mesoderm or else that, in the guise of meningocytes, they are already present in the cerebro-spinal spaces and ready to act as reparative agents. In either case we must assume further that they are capable of ultimate transformation not only into pavement cells but also into duraloid fibroblasts.

Whether the cells which participate in these activities are cells which wander in or cells which in a resting stage are normally moored in the leptomeninges perhaps makes very little practical difference, provided one appreciates their behaviour when called into action.

Formation of Biliary Pigments.—There remains a further matter for consideration in connexion with these meningocytes. After Edwin E. Goldmann's discovery that the clusters of endothelial cells of the Kupffer cell type which lie clustered in the blood channels of various organs have a selective affinity for the vital stains of the benzidine series, the suggestion, I believe, was first clearly formulated by H. M. Evans that these cells as a group, wherever they occurred, within the blood-stream or free in the tissues, should be looked upon as an endothelial organ of major physiological importance which in his belief is concerned in the production of immune bodies. It is this organ to which Aschoff has recently drawn renewed attention as the reticulo-endothelial apparatus, one of the functions of which—and there are probably many—is the phagocytosis and disposal of broken-down blood-cells.

Little or no attention, however, seems to have been paid by those interested in this subject to the existence of a similar apparatus in the meninges, though Goldmann, whose early death was a great loss to experimental pathology, in the last of his remarkable papers clearly described the pyrrol-staining monocytes which normally reside therein. Though misled, as so many others have been, into the belief that the cerebro-spinal fluid chiefly escaped by way of the pericranial lymphatics, he observed that, whereas the central nervous system itself remains unstained by vital dyes, the choroid plexus as well as the anterior lobe of the hypophysis becomes highly coloured; and at the same time certain cells of the meninges (in places which we now recognise to be those where clusters of meningocytes particularly abound) and also occasional cells of the same type scattered through the brain take the stain faintly. He regarded it as probable that these cells played the essential rôle of phagocytosis for the locality.

Let us for a moment return to a consideration of the curious fact that this specialised endothelial apparatus of the leptomeningeal spaces appears to be called into action more effectively by the introduction of blood corpuscles than by any other foreign substance. And in this connexion attention may be drawn to the different behaviour of the pachymeningeal and leptomeningeal surfaces following the extravasation of blood into the subdural space, for as is well known the clot adheres to and begins to organise from the dural side, whereas it fails to adhere to the arachnoid. Now the subdural space, as we have seen, has an outer and inner lining of quite different origin, and the different manner of reaction of the two surfaces to these subdural hæmatomas has been investigated anew by my recent assistant, Dr. Tracy Putnam. He has shown how, in the process of their digestion and organisation from the dural side, communicating or non-communicating endothelial-lined spaces appear to be formed, which are distinct from the newly formed blood channels. But there is another feature of these subdural hæmatomas which seems to have escaped attention—namely, the greenish surface colour which they acquire due to the deposition of biliverdin.

The presence of bile pigments, indeed, may be identified in cerebro-spinal fluids after almost any extravasation of blood into the spaces. This is the more peculiar when one takes into consideration the fact that the bile pigments themselves do not normally pass the barrier of the choroid plexus, but are only found in the fluid in small traces in long-standing cases of deep jaundice, and perhaps only then because of functional damage to the choroidal epithelium. And though the information is not likely to be forthcoming, at least from clinical cases of icterus, I believe that even when a trace of bilirubin can be detected in the subarachnoidal fluid it will not be found in the ventricles ; and if this should prove to be so, it would indicate that the pigment finds its way into the arachnoidea by way of the perivascular spaces rather than by passage through the filter of the plexus . . . .

The Meningiomas.—There remains one thing more to say of these meningocytes. It indirectly concerns the much-mooted question as to whether the cells of the reticulo-endothelial apparatus can, as Marchand and Maximow and Carrel believe, become transformed into fibroblasts. Though this is a matter more likely to receive a definite answer by the modern methods of tissue culture and supravital staining which would permit the transformation to be actually observed, nevertheless clinical and histopathological experiences may add something to the subject. And this leads me to speak of the tumours which might be expected to take origin from the cells of the apparatus under consideration, if it actually possesses the important physiological functions ascribed to it.

Endotheliomata, so-called, are known to arise in the liver, spleen, bone-marrow, and lymph glands where the cells of the apparatus in question abound, but in no situation are tumours of this category more common than in the meninges. They, consequently, are lesions long familiar to the pathologist and to the neurologist. A famous example, often referred to, was reported (as a sarcoma) by Byrom Bramwell in his early monograph on " Intracranial Tumours " (1888)—a young girl of 20 who had been admitted to the Newcastle Infirmary, Jan. 5th, 1877, in a terminal stage of compression from a growth which had given no localising symptoms. This, be it said, is a characteristic of these meningeal tumours, to slowly deform the brain in which they make a nest for themselves, often without any local symptoms whatsoever, nor indeed any pressure symptoms until the lesion may have attained an amazing bulk.

These tumours all have a common histogenesis, whether they occur in the spinal canal, taking their origin from the cells of the arachnoidal villi at the points of emergence of the spinal nerves, or as is more frequent from those which project into the venous sinuses of the cerebral dura. Unfortunately, however, they have been given by histopathologists so great a number of conflicting names that it has seemed best, partly for the purpose of emphasising their common origin and partly to get away from the unfortunate misnomer of " dural " endothelioma, to speak of them simply as meningiomas.

To the fact that they undoubtedly arise from the arachnoid cell-clusters of meningocytes Dr. Weed and I called attention in one of our early papers, though, as we found, it was not an original observation, for the suggestion had been made before by M. B. Schmidt (1902), and also long before him (1864) by the late Prof. Cleland, of Glasgow. But no one seems to have offered any explanation of the remarkable fact that the tumours invariably take their origin from the arachnoid and never from the pial side of the fluid pathway, for though " endothelial " tumours may in rare instances appear to arise from the pia they are of vascular and not mesothelial origin . . . .

Though we have only made a small beginning in the study of tumour cells by modern culture methods, such as have permitted Alexis Carrel to see macrophages become transformed into sarcoma cells, we have at least succeeded in cultivating the cells of a meningioma, and have seen cells which, unstained, were indistinguishable from tumour cells, engulf red blood corpuscles. Only by the employment of such methods can light be thrown on the much-mooted question as to whether the meningocytes actually become transformed into fibroblasts. The larger number of these clinically unmistakable tumours are almost wholly composed of endothelial cells, but certain of the older and psammomatous growths come to take on a fibrous change and may actually contain deposits of true bone ; but even in the more purely fibrous examples one may always find nests of mesothelial cells. From this histological evidence, if it is dependable, one would certainly be led to conclude that the cells comprising the reticulo-endothelial apparatus of the body, and of which the cell clusters of meningocytes are obviously important representatives, may actually undergo fibroblastic transformation.

Thus we have seen whence the cerebro-spinal fluid takes its origin, how it comes to make pathways for itself by percolating through the primitive mesenchyme, how these pathways which originate from cells of the neural crest become lined with a specialised mesothelial membrane, and how minute outlets for the absorption of the fluid into the large venous channels are formed—in short, how this circulatory switch for a fluid peculiar to the ventricular and meningeal spaces comes into existence, and how it communicates with the deeper parts of the brain by perivascular tubes of the pia-arachnoid.

We have seen, too, that in addition to the fixed pavement cells lining these spaces certain other cells termed meningocytes tend to become deposited in clusters which we may figuratively describe as moored fleets of destroyers ready to cast off and engage any objectionable invader. In this respect the phagocytic functions of these cells are in every way comparable to those exercised, for example, by the clusters of Kupffer cells in the hepatic vessels, for they have the same affinity for vital dyes, the same capacity to engulf and destroy red blood corpuscles, elements which are foreign to the circulating medium of the meningeal spaces, and they possess also the capacity in this process of blood destruction of transforming hæmoglobin into bilirubin. Hence these cells may be taken to represent the reticulo-endothelial apparatus for the meningeal spaces.

We have seen also how these clusters of meningocytes may become the seat of tumefactions which, because of their being in most cases incorporated with the dura, are commonly supposed to arise from it, but which actually take their origin from the meningocytes and may be conveniently designated as meningiomas. And it would appear from the study of these tumours that their endothelial ground cells may become metamorphosed into fibroblasts.

So by a consideration of the cerebro-spinal fluid and of the cells of the membranes which enclose it, one may be led into problems of wide concern in general pathology. But with the indented purpose of this lectureship in mind, it is improper to leave the subject without calling attention to the fact that, though we may not appear to be much nearer to a cure for congenital hydrocephalus in quest of which we started out, we have at least learned many things on the way which are essentially of practical therapeutic value.

ANATOMICALLY IRREGULAR SPHENOIDAL SINUSITIS WITH OPTIC NEURITIS,

LOCALISED BY THE SUCTION SYRINGE; WITH TWO EXAMPLES.

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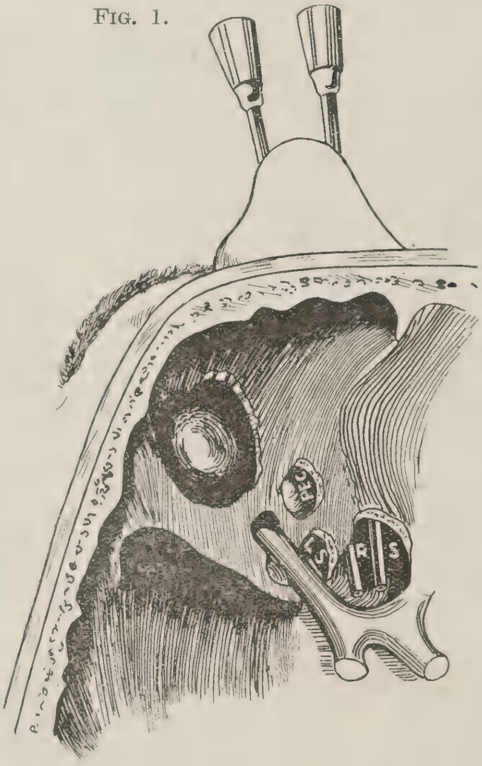
THE occurrence of so-called "canalicular optic neuritis," enlargement of the blind spot, and relative scotoma, due to pyogenic infection in the sphenoidal sinuses or posterior ethmoidal cells, or less frequently in the other nasal sinuses, is well recognised, and the detection of the infective focus by the suction syringe has been described in previous communications by the writer.[1] The investigation of the sinuses in patients suffering from these optic nerve defects suspected to be of nasal origin, sometimes present special difficulties, owing, on the one hand, to the absence of any visible purulent discharge,[2] and on the other to the irregular anatomical conformation of the sphenoidal sinuses and the ethmoid cells.

Anatomical Variations in Sinuses.

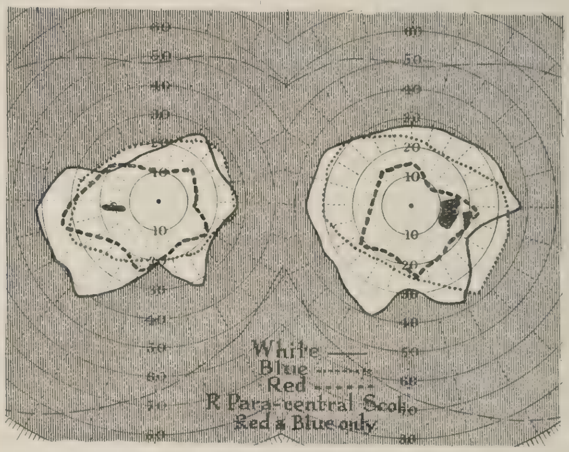
Thus, one sphenoidal sinus may be large and over-developed at the expense of the other, so that the large sinus extends far beyond the mid-line and consequently the small ill-developed sinus may be, so to speak, packed away into a corner difficult of access. Again, the posterior ethmoidal cell may be unusually large and over-developed at the expense of the corresponding sphenoidal sinus, which may be so encroached on that the large ethmoidal cell occupies more or less the usual site of a sphenoidal sinus or it may lie above the sphenoidal sinus, much as a first floor room lies above the corresponding one on the ground floor. While these anatomical variations are of no moment in health, it is quite another matter when the sinuses become infected and the focal infection causes partial or complete loss of vision, or, may be, is the primary and essential cause of rheumatoid arthritis, neuritis, neurasthenia, unsoundness of mind, and so forth, any or all of which do occur. If there is plentiful purulent discharge the indications for opening and draining the involved sinuses are sufficiently plain, but unfortunately such cases are less frequently associated with the complications mentioned than are the cases where the discharge is slight, macroscopically non-purulent, and often unnoticed until inquired into. It is therefore important to detect and to localise precisely the source of any infective focus and, when confronted with anatomical irregularities in these, relatively small deep-seated sinuses, to avoid overlooking the focus, an error which may cost the patient his sight or worse.

FIG. 1.



CASE 1.—Showing the cannulæ passed through the right and left nasal passages, but both entering the large right sphenoidal sinus (R S). It will be seen that both optic nerves are in anatomical relationship with this one sinus, hence both eyes affected. The small left sinus (L S), which was proved non-infected, is lying well to the outer side of the median line.

L. FIG. 2. R.



CASE 1.—July 4th, 1922. (McH. perimeter and scotoma verified by Bjerrum screen.) The visual colour-fields are all markedly contracted. The right eye chart also shows the large relative central scotoma and a smaller paracentral scotoma for red and blue only.

Clinical Records.

The two subjoined examples afford an interesting contrast; in the first the large sphenoidal sinus was infected and the smaller was sterile; in the second the large sinus was sterile and the small one, so difficult to locate, was highly infected. In the first case I failed to detect my mistake until I was led to make a further exploration; this helped me to avoid a similar mistake in the second, where the error would have been disastrous to the patient, because I should perhaps have left the essential focus unrelieved.

I know of no means, other than that of the adaptation of the method of exploration by the sinus syringe, by which the focal infections could have been localised during life; while post mortem such localisation could only have been of academic interest.

CASE 1.—C. R. D., male, aged 21, was referred to me by Dr S. H. Modi (Calcutta) and Dr. F. Gotla (London) for chronic sinus infection with headaches, mainly right supra-orbital. At age 9 he had undergone operation for removal of tonsils and adenoids, at age 13 further operation of turbinectomy, and again turbinectomy at age 15. At age 19 the right antrum was opened and drained, that was two years before I saw him. (Fig. 1.)

When I explored his nasal sinuses the right antrum yielded thick ropes of pus by the suction syringe, the left being clear.

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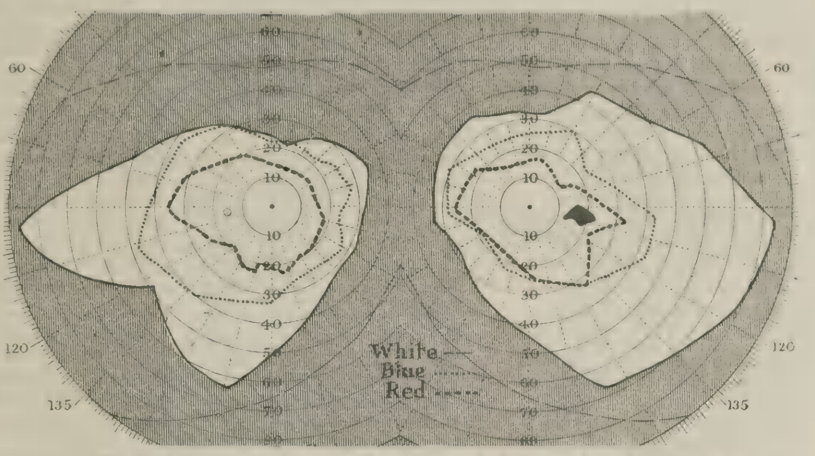
[1] Long Fox Lecture, 1907; Bristol Med.-Chir. Jour., 1908; Rhinology, Longmans, Green and Co., 1910.

[2] Les Sinusitis sans Pus. P. Watson-Williams, Archiv Internat. f. Laryng., &c., April, 1922.

The sphenoidal sinuses were explored and "found to communicate"; and further, the posterior ethmoidal cells were explored by cannula and suction syringe.

Film stain and culture of the sinus contents by Dr. A. T. Todd yielded results as follows: Both maxillary antra and the large right sphenoidal sinus and the posterior ethmoidal cells right and left yielded pneumococcus, polymorphonuclear cells being present in every one. But the small left sphenoidal sinus that was detected and explored later yielded neither organisms nor polymorph leucocytes, thus showing that it had escaped infection.

FIG. 3.



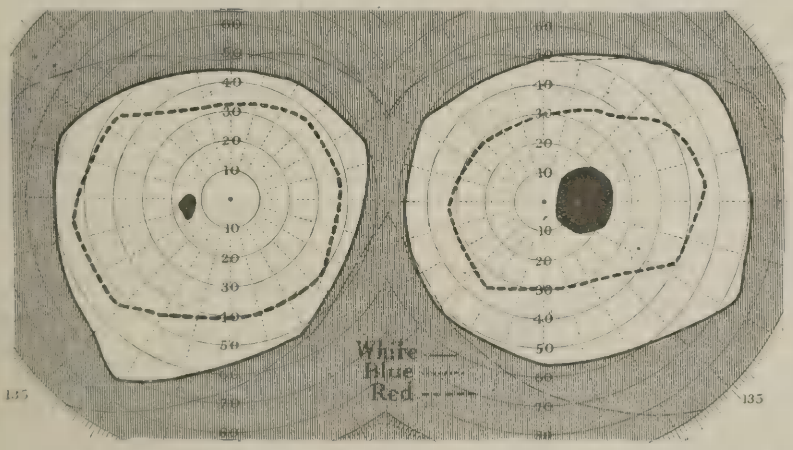
CASE 1.—Nov. 10th, 1922. Scotoma in R smaller and the paracentral scotoma gone. (Later, September, 1923, white fields normal.)

Examination of Visual Colour-fields, &c.—Ocular details of Mr. A. E. Iles's reports are given below under the various dates. It suffices here to state that his first revealed right enlarged blind spot and paracentral scotoma for red and blue; the left eye being normal and so corresponding to the non-infected sphenoidal sinus. (Fig. 2.)

It had appeared from the first nasal exploration that the right and left sphenoidal sinuses were both infected, but this was an error due to the one large sinus having been entered through both nasal passages. Further examination was therefore made and, by directing the cannula more outwards, one entered the true left sphenoidal sinus well to the outer side of what had been mistaken for the left sinus, and this latter did not communicate with the more central sphenoidal sinus on this the left side. Cultures of the sphenoidal sinuses showed that the smaller left side sinus which was outside the mid-line was non-infected, while the more central sinus, entered through the left nasal passage which was really the right extending across and encroaching on the left side, was highly infected with streptococcus, &c. Hence the explanation of canalicular optic neuritis restricted to the right side with apparently a double sphenoidal sinus infection.

All the nasal sinuses were opened and drained pernasally, and later a submucous resection of the septum was done to afford a more normal nasal air-way. As the result of the pernasal operations the visual colour-fields, as well as the general condition of the patient, became greatly improved. (Fig. 3.)

FIG. 4.



CASE 2.—Visual colour-fields and blind spots. (McHardy perimeter and enlarged blind spots verified by Bjerrum screen with 1 mm. white disc.) (Mr. E. R. Chambers.)

Reports by Mr. Iles.—Vision in each eye 6/5.

4/7/22: Fields show enlarged blind spot for red, white, and blue on right side; contraction of blue field, especially nasally right and to a less extent left. Small paracentral scotoma *red and blue* right eye.

10/11/22: Scotoma smaller, field fuller, especially R.E. white.

12/5/23: States that the right eye has "become smaller"; this was not found to be the case; the eye was as prominent as the left; no squint was detected by any test.

8/9/23: Still discharge from the nose. Paracentral scotoma right eye *to blue only*. White field not yet full, but fields of vision, especially as regards the blind spot, show improvement.

CASE 2.—C. E. C., male, aged 41, July, 1924. Markedly defective vision in right eye, which had persisted since influenza 14 months before, attended with severe pain at back of eyes and photophobia, and followed by double vision on looking towards right. Diplopia increasing, he consulted Mr. H. Snell, who noted paresis of right external rectus and suspected dental sepsis which, however, was excluded. Visual defects increased in right eye, objects being seen dimly, and Mr. Snell found the right eye divergent, the right optic disc slightly pale on the temporal side, and a central scotoma, but visual fields normal. The left eye he reported normal. The patient had noticed no nasal catarrh, but the rhinologist to whom he was referred kindly sent the following note:—

"No pus seen in nose. Sphenoid and posterior ethmoid cells washed out with Watson-Williams' syringe, also right antrum—washings clear. Culture report: No growth obtained on aerobic cultivation for 48 hours."

The negative nasal findings in view of the symptoms at this stage led to the case being diagnosed as a missed encephalitis lethargica.

Meanwhile the post-nasal catarrh had become much more noticeable, and it was at this stage, 14 months after the initial attack, that the patient came under my notice.

The fundus oculi and visual colour-fields, right and left, were examined by Mr. R. E. Chambers, who found a very large blind spot on the right side and some contraction of visual fields, both fundi normal, and no trace of diplopia nor of past optic neuritis. Anterior rhinoscopy revealed nothing abnormal and no discharge observed. Endorhinoscopy (Holmes) showed only a few indefinite strings of muco-pus, but the mucosal vessels were abnormally full on the right side posteriorly. (Fig. 4.)

Exploration by the Author's Suction Syringe.—Right antrum.—Film stain: A little pus, mononuclear polymorphs, some phagocytosis, streptococcus. Culture: Pure streptococcus. Left antrum.—Film: Occasional leucocyte. Culture: Negative. Right sphenoid.—Film: Mononuclear pus, streptococcus, no phagocytosis. Culture: Pure streptococcus. Left sphenoid (per right nose): Debris only. Culture and film negative. Right posterior ethmoid.—Film: Mucus—few mononuclears. Culture: *Staphylococcus aureus* only. (Fig. 5.)

After repeated lavage, &c., of the opened sinuses, Mr.

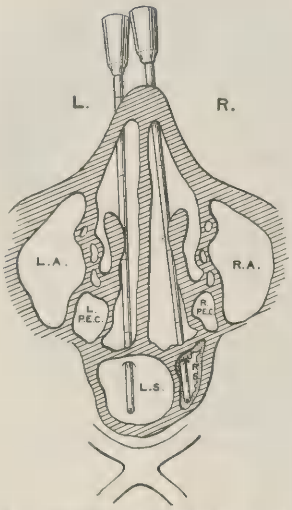
Chambers examined the eyes and reported August 16th, 1924 —i.e. five weeks after his first report: Vision in both eyes normal, visual fields for white and colours quite full, and there was no pathological blind spot selected by the perimeter. Central colour vision normal.

Seen again and tested in October, 1924, and he was then normal in every way from the ophthalmological point of view.

Discussion.

An interesting point is that the sterile left sphenoid extending well across the midline was entered as readily through the right as through the left nasal passage. Suspecting, therefore, that the right sphenoid was probably small and ill-developed and had been missed, another cannula was entered, directed well outwards, and the real right sphenoid was thus entered and explored, and yielded pure streptococcus on culture and film. The test applied was as follows. Two cannulæ were inserted, one through the right nasal passage, the other through the left, so that both had entered what was presumed to be the large left sphenoidal sinus. Then, on attaching a syringe to one cannula and syringing down sterile water, it escaped out through the cannula in the other side. Again two cannulæ were inserted both through the right nasal passage, one into the left sphenoid, the other directed outwards to enter the right sphenoid sinus, and on syringing water down the one it did not come up and escape by the other, showing that the two cannulæ passed in through the right nose were in different cavities. This is the method I usually adopt to determine whether one has entered one cavity with two cannulæ or that the two cannulæ are in different, though adjacent, cavities and was used in connexion with both of these cases.

FIG. 5.



CASE 2.—The cannula in order to enter the small infected right sphenoidal sinus had to be directed well to the outer side.

The practical point is that one thereby gains precise information as to the actual source of the extracted sinus contents and the bacteriological investigation tells us whether it is or is not infected.

CONGRESS ON VENEREAL DISEASE AT PARIS.—Following the Wembley Congress, organised by the British Social Hygiene Council, a meeting was held in Paris of the Union Internationale contre le Peril Vénérien, where decisions were taken with a view of further combating venereal disease. Great Britain, France, Germany, the United States of America, and 12 other countries were represented by delegates from the recognised social hygiene organisations, by delegates from the various National Red Cross Societies, and by a number of official Government representatives. Of the many decisions reached the most striking was the unanimous decision that the regulation of prostitution was inconsistent with efforts to eliminate venereal disease. This same point was brought out so long ago as 1913 at the International Medical Congress held in London. In Paris the system of control of prostitution was condemned on medical grounds, and thus after 12 years the decision reached in London was endorsed. The Congress dealt particularly with the difficulty of eliminating disease from the mercantile marine, with the measures which should be taken in connexion with frontiers, with the problem of prostitution, and with emigration situations. Certain of the shipping interests agreed cordially to coöperate by financial assistance with the measures recommended in the mercantile marine. The Council of Direction adopted a report recommending measures against prostitution. These include wider propaganda and stricter legislation.

THE RELATION OF NEPHRITIS IN EGYPT TO INTESTINAL INFECTION.

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IN a paper published in THE LANCET[1] five years ago I stated that nephritis, as met with in Egypt, was usually due to bacilli of coliform type derived from the intestine. This opinion was based on the results of bacteriological examination of the urine, the experimental reproduction of nephritis in animals by injection of the bacilli isolated, and the favourable effect of vaccines in human cases. These findings are not supported by the general run of experience in this country. Most observers report that streptococci appear the commonest cause of acute glomerulonephritis and that in many patients sore throat precedes the attack.[2, 3] In some cases, however, coliform bacilli are deemed responsible, especially when signs of urinary tract infection are present.

In this paper I wish to bring forward evidence to show that in Egypt we have largely to deal with a form of nephritis that is intimately connected with intestinal disease. For this purpose I have analysed some 100 cases of nephritis with œdema admitted to my wards in Kasr-el-Ainy Hospital, Cairo, during the last few years. The distinguishing feature of œdema has been chosen as indicating a lesion sufficiently advanced to cause failure of an important renal function and not as a necessary criterion of acute or parenchymatous nephritis. While the ordinary case of granular kidney has thus been excluded, a further omission has been made of renal patients who had developed dropsy in connexion with signs of heart failure.

Clinical Types.

For investigations into ætiology, the more acute forms are most suitable. Hence a simple division of the series into (*a*) acute, (*b*) syphilitic, and (*c*) chronic forms has been made. The distinction between acute and chronic cases is beset with certain difficulties, but apart from considerations of onset, duration, symptoms, and course, there is one feature which certainly reveals the existence of an acute inflammation of the kidneys—namely, the presence of abundant blood casts or cellular casts in the urine. This feature has therefore been taken as the main criterion of an acute nephritis, although perhaps unduly exclusive. To this group one-third (34 cases) of the total number belong. In five patients out of the total of 100 there was strong evidence that syphilis was responsible for the renal lesion. These cases have been grouped together irrespective of the nature of onset or the duration of their symptoms. The remaining group, comprising 61 out of 100 cases, is mainly composed of chronic forms of nephritis. In what proportion the onset had been acute or gradual was impossible to determine; five patients described a previous attack with subsequent return of dropsy.

Causative Factors.

Antecedent Conditions.—In 85 per cent. of the acute cases there appeared a causal connexion between the renal inflammation and some antecedent or concomitant infection. A similar connexion could only be established in a minority of the more chronic forms, for the patients had often forgotten slight illnesses in the past, and the appearance of œdema only fixed the date of gross renal failure and not necessarily the time of onset of kidney disease. Among 27 cases of acute nephritis whose clinical history was recorded, no less than 20 had been incapacitated by a definite illness for some time prior to the appearance of renal symptoms. This history was often substantiated by the persistence of such antecedent symptoms after admission to hospital, while other patients showed similar signs which had not been the subject of complaint owing to their milder nature.

These preceding conditions are tabulated below :—

—	Antecedent history of	Persisted on entry.	Found in others.
Fever—generally prolonged	8	6	6
Fever followed by dysentery or diarrhœa ..	7	4	2
Acute dysentery	5	1	2
Total	20 (of 27)	21 (of 34)	

In no instance could an antecedent fever be identified with scarlet fever; the prolonged course was usually sufficient to negative this. The fever was proved to be malaria in one patient, and in two others may have been due to an acute pyelitis.

While the importance of bowel infections is brought out in the above table, examination of the patients disclosed some conditions frequently associated with nephritis, which explained the significance of the fever and dysentery described.

(*a*) *Bilharzia Mansoni Infection.*—Definite signs of this were present in 55 per cent. of acute cases of nephritis, a much higher proportion than is found among hospital patients in general. The early signs are prolonged fever followed by more or less dysentery (often transient), and later an enlargement of the liver and spleen. Egyptian patients only notice these symptoms when pronounced, and frequently one or other is slight. Hence it appears that the preceding illness described by so many patients was due to this type of bilharzial infection, and that nephritis was apt to occur at the time when ova had made breaches in the intestinal mucosa. Among patients admitted for splenomegaly in a later stage without obvious intestinal lesions, there was no special tendency to nephritis. But renal disease was fairly common in cases of chronic bilharzial dysentery or advanced cirrhosis, when the general wasting and loss of resistance associated with hepatic and pancreatic insufficiency often predisposed to intestinal disorder and infection.

(*b*) *Bilharzia Hæmatobium Infection.* — Urinary bilharziasis was found in one-third of the renal cases, an incidence too low to be significant in itself, considering the wide prevalence of this disease. But while bilharzial disease of the bladder alone appeared to have little influence on the development of nephritis, the frequent involvement of the ureters undoubtedly predisposes to renal infection. The experiments of Lepper[4] showed that injections of *B. coli* into the blood-stream of rabbits regularly caused kidney lesions if the ureter was temporarily obstructed.

(*c*) *Intestinal Worms.*—Of these infestations, so common in Egypt, ankylostomiasis was most frequently associated with nephritis, though much less often than affections of the large intestine. Mistakes in diagnosis may occur in severe cases of anæmia when widespread œdema is present and sometimes albuminuria from œdema of the kidneys, thus simulating nephritis.

Bacteriological Results.

A routine bacteriological examination of the catheter urine was made in every case, and the results confirmed the work mentioned previously. Great care is necessary in the collection of samples and was rewarded by very uniform results in males, though in females contamination was relatively frequent. The procedure adopted was as follows :—

The external parts were carefully cleansed with antiseptic solution; since male Egyptians are circumcised one source of contamination was absent. A soft rubber catheter was passed by gloved hands and some urine allowed to escape. An attendant then compressed the catheter; the end was flicked clear of urine and sterilised in a flame. A few c.cm. of urine were next collected quickly in a sterile tube during momentary removal of its rubber stopper. The specimen was kept standing for an hour (unless turbid) to allow suspended matter to settle, when a culture tube was inoculated from the deepest portion. The culture and urine tube were kept 24 hours at 37° C. Should the culture tube show no growth in this time a fresh inoculation was made from the deposit in the urine tube that had been incubated for 24 hours.

The results may be summarised thus :—

(*a*) In cases of acute nephritis positive results from the first culture were almost invariably obtained. One patient—seen in private and not included in the series—gave a negative result on two separate occasions. In this case the acute nephritis had followed influenza, and ordinary media were used.

(*b*) The urine from cases of chronic nephritis showed a general correspondence between the microscopical picture of the sediment and the bacteriological examination. When cells were visible, included in the casts or free, a positive culture was usually obtained either from the fresh or the incubated specimen. If only granular and hyaline casts were present the urine proved sterile in the great majority of cases.

(*c*) The three uncomplicated cases of syphilitic nephritis showed a sterile urine.

(*d*) From patients whose urine contained definite collections of pus cells, usually from a cystitis complicating old bilharzial disease, a growth of staphylococci was usually obtained, either pure or in addition to bacilli. When there was much pus a bacillary or mixed growth was the rule. Streptococci were found in one case of septic nephritis.

(*e*) In uncomplicated cases of nephritis a pure growth of bacilli of intestinal types was generally found on culture of the urine. Their cultural properties were investigated by Dr. J. K. Clarke, who found that most belonged to the coli-typhoid type. Alkaligenes, non-lactose fermenters, and *B. pyocyaneus* were found in several.

Experimentally, the nephrotoxic properties of these organisms varied considerably. The more typical *B. coli* obtained from cases of nephritis with obvious bacilluria had little effect, whereas the coliform organisms obtained from the more common form of nephritis reproduced nephritis in a series of animals inoculated either subcutaneously or intraperitoneally. A diversity was also noted by E. Lepper, who reported that one strain of *B. coli* used in her experiments had a decided toxic action on the kidneys of rabbits injected intravenously.[4] The effect on the kidneys persisted long after the initial phase of bacillæmia in the animals, and similar lesions were found in the liver, as in cases of nephritis induced by chemical poisons. The staphylococci found in cases of pyuria had no selective effect on the kidneys of animals injected.

Agglutination tests on patients yielded unsatisfactory results, in keeping with the similar experience of pathologists regarding simple bacilluria.

Complications.

Among the complications that developed in the course of a nephritis there are two forms of special importance.

1. *Respiratory.*—Bronchitis was tolerably common and evenly distributed among the various groups, occurring in five acute, one syphilitic, and nine chronic cases, but it appeared more commonly as a later complication than an antecedent condition. In one patient pulmonary tuberculosis definitely preceded nephritis. One renal case was admitted with severe pneumonia which proved fatal, and another died as the result of an acute serositis affecting the pleuræ and peritoneum. During their stay in hospital two patients contracted influenza (then epidemic), another developed broncho-pneumonia, and three others a febrile pleurisy. In all six patients recovery was uneventful and only temporarily delayed progress.

2. *Intestinal.*—An acute febrile diarrhœa or dysentery developed suddenly in nine of the nephritis cases. Unless promptly controlled this complication had a most prejudicial effect on the renal and general condition, and in four cases was rapidly fatal. There is much reason to fear that cross-infection from other patients suffering from intestinal disease was often responsible—a disaster most difficult to avoid with patients of the most unhygienic habits in crowded wards. The condition certainly seemed of infective origin, and in most of the patients there was no apprehension nor signs of uræmia beforehand.

Treatment.

As a result of the investigations described—both clinical and bacteriological—the conclusion seemed warranted that most cases of nephritis in Egypt arose as a complication of an intestinal infection. Hence the opportunity was taken to treat suitable cases on this assumption, while not neglecting usual measures. For the ordinary case without present diarrhœa, the usual purgative treatment given for acute nephritis may help to diminish a source of intoxication. Intestinal antiseptics proved of very limited value. For patients with obvious intestinal lesions a direct therapy was indicated. Some forms of chronic dysentery of amœbic or bilharzial origin responded to emetine injections and showed a distinct improvement in the renal condition as soon as the intestinal infection was controlled. Similarly patients with nephritis complicating ankylostomiasis benefited by specific treatment, as in the case illustrated by Chart 1.

A man of 25 had suffered from fissure of the anus for six months and general dropsy for the last four months. On admission there was extensive œdema with ascites. The urine contained a large trace of albumin with fine, long granular and a few larger cellular casts. He was anæmic (Hb. 60 per cent.) and the stool contained ankylostoma ova. Appropriate anthelmintics were given in addition to the usual treatment for nephritis. A slow improvement followed, with a sudden diuresis as soon as the worms had been removed. In about three weeks after entry the dropsy had disappeared with a loss of 30 lb. in weight.

For acute cases of nephritis and pyelitis when bacilli were plentiful in the urine, the free administration of alkali appeared beneficial, as in bacilluria. Urinary antiseptics were of little avail and the impaired excretory powers of the kidneys prevents the usual degree of concentration in the urine.

Vaccine treatment proved the best means of treatment in most cases of bacillary nephritis. Some examples of their action have been given in a former publication,[1] but here I wish to describe a few cases which illustrate special points in their use. Chart 2 shows the effect of small repeated doses in a chronic case which had not responded to the usual treatment.

A man, aged 26, was admitted for general œdema which had lasted for 14 months. The urine averaged 900 c.cm. daily with a low sp. gr. but an albuminuria of 6 parts per 1000. There were irregular recurrences of fever with chronic enlargement of the liver and spleen, not at that date recognised as evidence of *Bilharzia mansoni* infection. Examination of the urine showed a deposit of muco-pus containing some granular casts, and a catheter specimen gave a good growth of a coliform bacillus. The administration of an autogenous vaccine induced a definite diuresis with relief of œdema.

Through the courtesy of a colleague, Dr. Abd'el Aziz Ismail, I was enabled to try vaccine treatment on a case of nephritis when the patient stayed sufficient time in hospital to show the full effect (Chart 3).

A male, aged 40, had suffered from severe dysentery for six weeks, and for the two months following from an œdema which had reached formidable dimensions by the time of admission. There was irregular fever associated with chronic dysentery (five to six stools daily), probably founded on bilharzial infection. The urine showed the usual features of a chronic nephritis. In this case urea was tried as a diuretic on account of the oliguria present; its use was followed by a marked rise in the amount of urine excreted, but the albuminuria just afterwards increased from 3 to 10 parts per 1000. Meanwhile emetine injections had been given perseveringly, but without effect so far on the fever and dysentery. The injection of an autogenous vaccine had a diuretic effect, and the albuminuria was reduced. Continued treatment with emetine and vaccine resulted in abolition of the fever, then abatement of the diarrhœa, with a marked diuresis and disappearance of the dropsy. The albumin diminished rapidly to a trace.

Experience in other cases showed that vaccines generally had a very definite effect on the renal condition and often on fever, if present, but did not check a diarrhœa. The explanation is probably that diarrhœa results from various lesions, such as ulcers originally due to amœbic or bilharzial infection through which coliform bacilli have been absorbed. Appropriate vaccine then checks the effects of such absorption without influencing the intestinal lesion.

While an autogenous vaccine was naturally preferred, equally good results were often obtained from an allied strain of organism. In one patient temporary improvement followed the use of a stock vaccine, while an autogenous vaccine used later brought about a relapse. In the light of later experience this anomaly is explained by the inappropriate dosage, a matter of considerable importance.

The first patients selected for vaccine treatment were non-resolving cases of nephritis in whom œdema persisted. These reacted to doses of 25 to 50 millions as a rule. But when the nephritis is acute, with oliguria or fever, or if high albuminuria is present, the kidneys seem much more sensitive and such doses may do more harm than good. Should a non-autogenous vaccine be used, a comparatively large dose may prove safe and beneficial when the same dose of autogenous vaccine is too large. A particularly interesting case, illustrating the importance of the right dose, is shown in Chart 4.

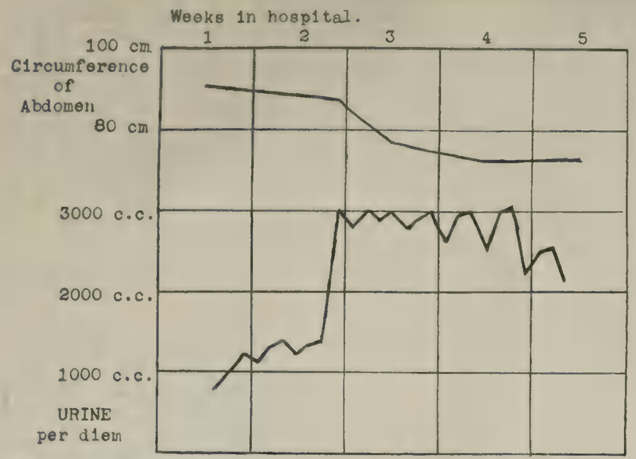
The patient, a woman of 25, who had had no previous illness nor been pregnant, was admitted to another section for a general œdema of a fortnight's duration. The daily quantity of urine averaged 600 c.cm. and there was a considerable amount of albumin. Under the usual treatment the œdema diminished and the output of urine rose to 900 c.cm. when she took her discharge. A week later the dropsy recurred and so rapidly increased that in a few days she returned to hospital and was admitted to my ward. Her condition now resisted the treatment which had proved beneficial before. The urine averaged 750 c.cm. daily, with an albuminuria varying from 10 to 20 parts per 1000, and contained a large number of casts—granular and hyaline with few included cells. There were no signs of complicating disorders, and the Wassermann reaction was negative. A catheter specimen gave a good growth of Gram-negative bacilli, which did not ferment lactose. Renal efficiency tests gave good results; the urea concentration was high, blood-urea 61 mg. per 100 c.cm., and the phthalein excretion 43·5 for the first hour and 32·5 for the second. The blood pressure was normal: 120 and 80 mm. Hg.

The condition therefore corresponded clinically to Epstein's nephrosis. Intravenous injections of calcium chloride and the administration of urea by mouth (15 g. daily) were ineffective. Increased protein feeding unfortunately increased the œdema and was abandoned.

Vaccine treatment with the bacillus found in the urine was begun with an initial dose of 25 millions which rather aggravated the oliguria, and smaller doses of 10 and 15 millions used subsequently failed to improve her condition. The patient had now been two months in hospital without benefit. I then tried giving the vaccine by mouth on an empty stomach. The first dose, 15 millions, caused a slight fall in the urinary excretion followed by a gradual rise; a week later a dose of 20 millions by mouth caused a fall without a rise later. A third dose of 15 millions caused no fall, but the later effects were apparently neutralised by the onset of a septic infection in the flank accompanied by fever. As soon as this subsided the oral administration of the vaccine was recommenced, using quite small doses, 10-15-20 millions at short intervals. This induced a diuresis which removed the extensive œdema. Owing to the breakage of the bottle the autogenous vaccine was lost, but fortunately a substitute vaccine tried proved equally efficacious.

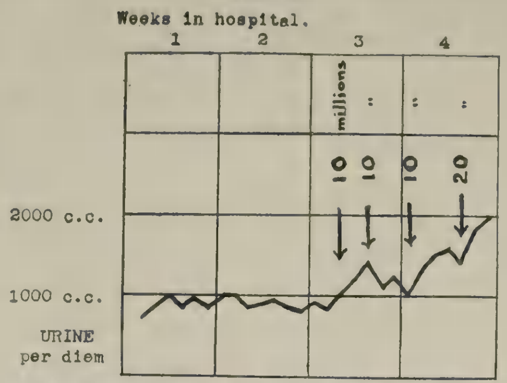
On discharge there remained an albuminuria of about 5 parts per 1000. The patient attended regularly as an out-patient and at first showed an increase of albuminuria

CHART 1.



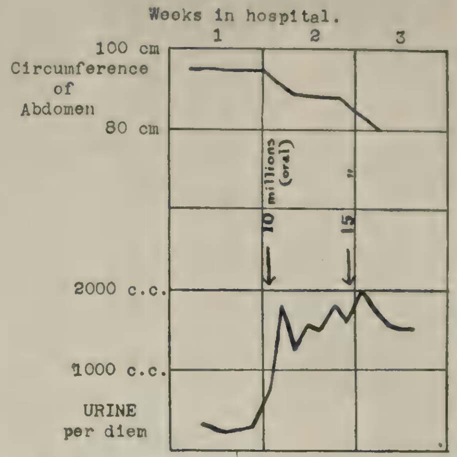
Case of ankylostomiasis complicated by nephritis with general œdema and ascites for four months. Anthelmintic treatment caused a gradual improvement with a sudden diuresis as soon as all the worms were expelled.

CHART 2.



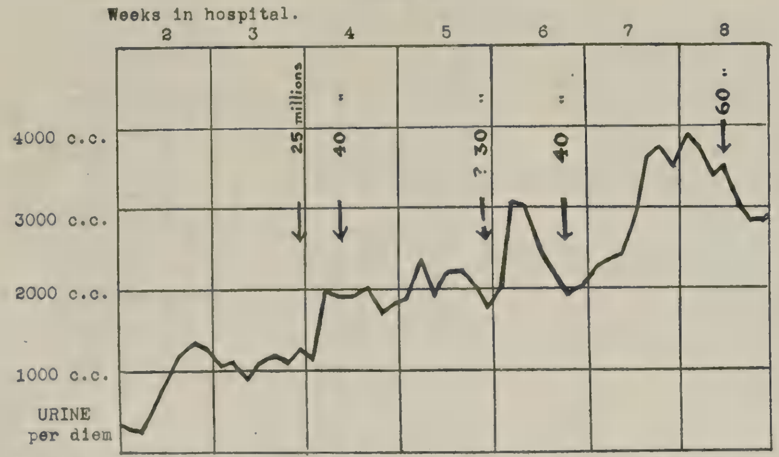
Case of chronic nephritis with œdema that had persisted for 14 months. Patient had *Bilharzia mansoni* infection with recurrences of pyrexia. Treatment by injection of an autogenous vaccine, as indicated by the arrows, caused diuresis and relieved the œdema.

CHART 5.



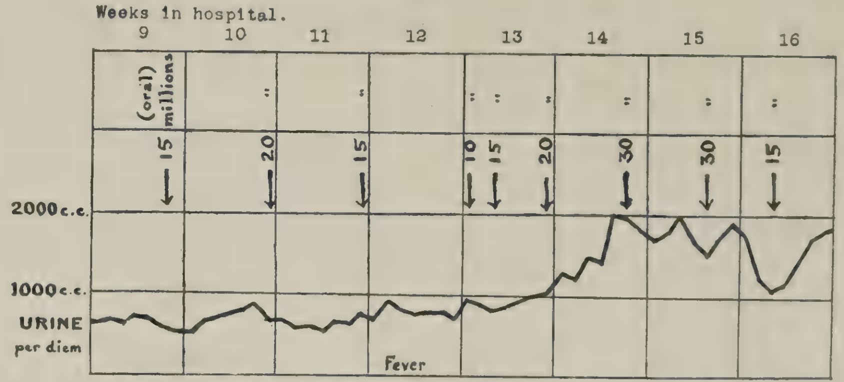
Case of severe nephritis with high albuminuria, oliguria, and extreme dropsy with ascites. Chart shows immediate diuresis (accompanied by a striking diminution in the albuminuria) on treatment by vaccine given orally. This occurred in spite of an acute diarrhœa and fever that had developed two days before.

CHART 3.



Case of prolonged dysentery with fever (due to *Bilharzia mansoni* infection) complicated with nephritis. On admission there was much œdema and oliguria. The chart shows some diuresis in the second week following the administration of urea. An autogenous vaccine was afterwards given by injection as indicated in the chart. Emetine was given during the third, fourth, and fifth weeks. The fever and dysentery declined in the sixth week. By the eighth week the albumin had decreased to a trace; the diuresis continued for another month.

CHART 4.



Case of prolonged nephritis with much œdema and high albuminuria. No improvement took place during the first eight weeks in hospital, before the chart commences. The chart records the effect on the urinary output of doses of an autogenous vaccine given by mouth. The last dose shown was of a substitute vaccine.

with a slight return of œdema on the resumption of her ordinary life, but with weekly doses of vaccine (oral) the albuminuria was reduced till it reached a steady level of 3 per 1000.

Since no further improvement was expected, the patient was again admitted to hospital. The phthalein test now revealed a considerable deterioration of renal efficiency, the figures being 11 per cent. in the first hour and 14 per cent. in the second, a total of 25 as compared with 76 obtained six months previously. Decapsulation was therefore performed on both sides under stovaine anæsthesia. Recovery was uneventful, and on discharge the urine had a sp. gr. of 1020 and $1\frac{1}{2}$ parts per 1000 albumin. The patient has been very well since, has only slight albuminuria ($\frac{3}{4}$ per 1000), a normal blood pressure, and excellent renal efficiency by the phthalein test—58 per cent. in the first and 25 per cent. in the second hour.

The experience gained from this patient suggests that in some cases there is a hypersensitiveness of the kidneys acquired in the course of a renal inflammation towards the exciting antigen, which may be reduced by small doses of vaccine. On the assumption that the intestinal tract is the original source of bacillary infection, immunisation by the oral route appears a logical procedure, following the observations of Besredka[6] and other French workers. The immediate response to such treatment shown in the next case (Chart 5) suggests that the dissolved antigen in the vaccine may be responsible, as has been shown by Perlweig and his co-workers to exist.[7]

This patient, a boy of 15, had been ill three months with severe nephritis. On admission there was extreme œdema with ascites and double hydrothorax. Only 250 c.cm. were passed daily, the sp. gr. was 1031, and the albumin content 18 and 20 parts per 1000, as measured on two separate occasions. Microscopically the casts were mostly of the granular variety, some being of large diameter. There were few free cells and not many embedded in the casts. On account of the swelling of the genitals a catheter was passed with difficulty and the specimen only yielded a growth of staphylococcus which appeared a simple contamination. The Wassermann was negative. The abdomen was tapped the day after admission and 2200 c.cm. withdrawn, but no benefit to the renal condition ensued during the following week. A small dose (10 millions) of the vaccine used as a substitute in the preceding case was then given by mouth. The result was immediate. Diuresis was established and next day the urine contained but a trace of albumin.

Considerations of space prevent reference to other cases which showed satisfactory results from this treatment. Of special interest is the favourable action of stock vaccine in some chronic renal cases when bacilli were not found in the urine.[1] It would appear that kidney disease may be kept up by absorption of toxins from the intestine without excretion of bacilli being detected. The suggestion that the vaccine acts as a simple diuretic is negatived by its failure to influence the output of urine in non-renal cases when used in similar doses.

Summary.

The onset of acute or subacute nephritis in Egypt is commonly preceded by intestinal infection. Bacteriological examination of the urine in such cases shows the presence of bacilli of intestinal types. These bacilli are capable of reproducing nephritis in laboratory animals. Cure of an intestinal lesion was found to benefit a consecutive nephritis. Vaccine treatment was frequently successful in these cases of infective nephritis. The dose should be inversely proportional to the severity of the renal symptoms. The oral administration of vaccine was found efficacious.

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RESPIRATORY CATARRH IN CHILDREN.[1]

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THE catarrhal child has received far too little attention, and though common enough in all classes its frequency is not sufficiently realised. It may be that until we started to examine in a routine manner so-called healthy infants we saw few cases; the doctor was not called in except for acute bronchitis or broncho-pneumonia, and the consequences, or rather the beginnings of catarrh in children, were overlooked.

The first surprise that I had when conducting routine examinations in young infants, 3 to 6 weeks old, was to note that at least half of them already had respiratory catarrh. I have been through the last thousand of my case-sheets and find that 499 were already infected. On questioning the mothers the usual answer was "Yes, 'e was born with it." The percentage of affected seems very high, but it must be remembered that the patients were drawn from the lower social strata of the population.

The signs on which the diagnosis was based in this series were: (1) Snuffles; (2) sucking in of the lower ribs (Harrison's sulcus); (3) definite bronchial catarrh, found by auscultation.

Before examining the reasons for this extensive infection of the respiratory tract in early life, the effects, immediate and remote, arising directly or indirectly from it, may be noted; some of them are from direct observation, and some of them may be classed as hypotheses.

(1) *The Nose.*—The first thing that happens when an infant gets a cold is that the nose becomes wholly or partially blocked. One effect of this is that the whole respiratory mechanism gets thrown out of gear, owing to the amazing efforts that a young child makes to breathe through a blocked nose, and its reluctance to breathe through its mouth. Anyone can observe this by holding the nostrils of a very young infant. After several unsuccessful efforts to breathe through its nose it wakes up and cries and then, but not till then, will air enter the chest. This nasal obstruction from catarrh leads immediately to sucking in the lower ribs, and to the formation of what is known as Harrison's sulcus. Tradition and the text-books attribute this sign to rickets, but it is so often seen in non-rickety babies, indeed, as a permanent deformity in infants too young for rickets. Rickets may, when combined with nasal obstruction, help to exaggerate and fix the deformity, but the disease has, in my view, nothing to do with its original formation.

The next serious effect of partial nasal obstruction is the difficulty of feeding. Modern opinion attributes the failure of breast-feeding, when it occurs, to the baby and not to the mother. It is thought that all women are potentially good milkers, but that some babies are bad suckers, and that the milk ceases from lack of stimulus. In such cases there is no more potent cause of inadequate sucking than partial or complete nasal obstruction, and where the result—a too frequent one—is failure of the milk-supply, a disaster occurs of the first magnitude in the poorer classes.

The earlier the infant suffers with nasal catarrh, the longer the complaint takes to clear up; in fact, in the majority of instances it never clears up entirely, but becomes more or less chronic with acute exacerbations. And the results of chronic nasal catarrh as the baby grows up are serious; probably it is the one and only cause of the disease known as "tonsils and adenoids." This is to adopt the view that chronic enlargement of the pharyngeal and faucial tonsils is merely one manifestation of chronic nasal catarrh, the condition being the effect of infection of the upper air passages renewed and re-renewed. Another result is chronic suppurative rhinitis with mal-development of the nasal passages, leading to chronic sinus troubles and all their complications and sequelæ.

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[1] An address given to the Bristol Medico-Chirurgical Society.

An indirect result of bad nasal catarrh in infants, especially if combined with sore buttocks and failure to gain weight from the feeding difficulty, may be a mistaken diagnosis of congenital syphilis, for snuffles, napkin rash and malnutrition, give a fairly complete picture of that disease.

(2) *The Ears.*—Among the hospital class, discharging ears in infants are sadly common. In fact, the medical officer is seldom told of it, as it is regarded as an inevitable concomitant of teething and of no real importance. It generally clears up quickly and relapses with every fresh acute exacerbation of the catarrh. It is not unreasonable to consider that the otitis media of school-children is generally a relapse, a supposition which explains the fact, with which all of us are familiar, that the vast majority of the out-patient class are deafish—to put it mildly. Histories of previous infantile attacks of otitis media are difficult to get, but often I have had the experience of the mother denying a previous attack, when I have had the previous occurrence noted.

(3) *The Chest.*—The following may be rather a surprising statement, but every baby that I have examined under 4 weeks old, and it is something over 400, that has had nasal catarrh has had definite signs of bronchial catarrh. In fact, in almost a majority, the bronchial catarrh is the plainest feature of the disease; the nasal catarrh may not be obvious, though the mother will generally have noticed it, but the tell-tale sucking in of the lower ribs is present.

A few infants from 4 to 6 weeks old escape bronchial catarrh with a cold, but after the age of 3 months this is usual. In only two cases have I noted it after 6 months in a chest previously clear. It would appear that every day of its life that one can put off the inevitable cold in an infant, the more remote becomes the chance of infection of the lower respiratory tract. Under 3 weeks of age the infection is a certainty, but every week after decreases the risk, which is negligible after 6 months of age.

Once a child is bronchitic, every fresh cold, in the words of the nursery, "flies to its chest" and causes an exacerbation of bronchial signs and symptoms. In fact, there is many a child of under 6 months that one would describe as a chronic bronchitic.

As these children grow up the acute attacks continue, though in the intermissions there are always signs in the chest, if they are carefully listened to. If we watch such an infant week by week we find signs either of chronic or acute bronchitis always. I have not watched these children yet beyond 5 years old and only a few up till then, but I submit that the process probably goes on, if to a less degree, through school life, and it is not an improbable speculation that the bronchitic baby is the precursor of the bronchitic school-child and that the bronchitic child is father to the chronic bronchitic adult. As far as I am aware, this has not been suggested before, and one observation in its support is that on the pensions boards nearly every ex-soldier pensioned for chronic bronchitis shows a well-marked Harrison's sulcus, as a fair proof that they were catarrhal babies. This idea that the catarrhal bronchitic baby is the sole ancestor of the chronic bronchitic is speculative, but it is worth following up. The proof of it presents difficulties in the adult, as infantile histories of bronchitis are hard to obtain with any accuracy.

There are at any rate very severe handicaps to the bronchitic child, for attacks of broncho-pneumonia occur with frequency, while measles, whooping-cough, and even the administration of an anæsthetic present added risks to such a child. From these clinical observations one main deduction may be drawn; it is that the earlier in life and more frequent the attacks of catarrh on the child occur, the more damage do they do and the more disastrous is the result.

The question of the pathogenesis is bound up with the factors which control the spread of infectious disease and with the local and general immunity. The position is well put out by Dudley,[2] and I am in entire agreement with his views as expressed.

The development of respiratory catarrh probably depends on two main factors: (1) The number and virulence of the catarrhal organisms which attack the mucous membrane; (2) the local resistance of the mucous membrane and the general immunity of the body.

It is probable that a given mucous membrane can deal with a given number of organisms in a given time—it can deal with x organisms per minute, the value x depending on the virulence of the organism and the resisting power of the mucous membrane.

An individual with a catarrh breathes out organisms suspended in particles of moisture very much in the same way that a person breathes out smoke when smoking tobacco. That is, as the smoke leaves the mouth there is first a concentrated puff and then it gradually disseminates into the room where, in the absence of proper ventilation, it hangs about the room. So it is with a person suffering from a respiratory catarrh. The concentrated breath is highly charged with organisms, which in the absence of proper ventilation will gradually diffuse throughout the room. On this theory then, one can get the $x+1$, the morbid dose, either by a direct hit from a cough, sneeze, &c., or by staying too long in an atmosphere too heavily loaded with organisms. This has been proved by exposing plate cultures in such circumstances. This morbid dose, this $x+1$, is determined by the virulence of the organisms and the local and general resistance, but the local resistance, the mucous membrane, must be the main barrier to catarrhal infection. That the mucous membranes have local resistance has been proved by A. Fleming.[3] Apart from the possibility of chemical disinfectants, he has shown that the mucous membrane secretes a definite bacteriolytic agent. What would appear from clinical observations is: (1) that the very young mucous membrane is deficient in resistance; (2) that the mucous membrane, which has been the object of early and repeated attacks, either loses or never acquires an adequate resistance.

The view that the general immunity of a very young baby is less than that of its mother is not generally held, but there is a good deal of clinical evidence to support the theory by analogy that the local resistance is deficient. For instance, the intestinal tract is notoriously easy to infect in the young infant, and the skin is extremely susceptible to staphylococcal infection. In the respiratory tract the frequency of catarrh under 3 weeks old, the undue chronicity of it when it does occur, and the rapid spread into the lungs under 6 weeks old affords considerable proof of early local deficiency. And pathological attacks of catarrh on these mucous membranes, respiratory and intestinal, do not confer immunity but rather the reverse. The ideas of Prof. Kenelm Digby, of Hong-Kong ("Immunity in Health," 1919), are to my mind correct—a normal child acquires its local, and in part its general resistance to catarrhal organisms, by frequent submorbid doses of these organisms. But morbid doses—that is to say big enough doses to cause an inflammatory reaction, do not confer local immunity, but cause more or less permanent damage to the epithelium of the respiratory mucous membrane. This would be true whether respiratory catarrhs are caused by well-known catarrhal organisms, or whether some unknown filter-passer is the "villain of the piece."

In the prevention of this condition these theoretical views become of extreme importance. The morbid dose of catarrhal organisms on the respiratory mucous membranes—what may be styled the "knock out" dose—must be postponed as long as possible. There can be no fear of the child missing the submorbid or immunising dose. This postponement may seem impossible to secure among the badly housed lower stratum of the population, though among the decently housed and not overcrowded class it is fairly easy. We have the two things to aim at—viz.: (1) to avoid what has been styled the direct hit, and (2) to keep an infant out of stuffy places.

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[2] THE LANCET, 1924, i., 1141.

[3] Proceedings of the Royal Society, 1922.

To avoid the direct hit attention must first be devoted to the mother. If she suffers from chronic suppuration of the upper air passages, it will be difficult, but antenatal nasal hygiene and treatment should be carried out. If she has the misfortune to have an acute catarrh when the baby is born the direct hit may be avoided by instructing her to wear a folded handkerchief over the mouth and nose while " doing " or feeding the baby. My personal experience of the value of this precaution has been most satisfactory, and it should be extended to the maternity nurse and children's nurse. All persons coming to view the infant should be inspected for colds and shut out if a cold is admitted, and always be requested neither to breathe on or kiss the baby.

To avoid the other main method of infection, the germ-laden atmosphere, is an easy matter in an uncrowded house. The infant should either be kept out of doors or in a draught. It is difficult to overcome prejudice in this matter, especially during the daily bath, but it is certain that no infant can come to any harm if efficiently bathed in front of a fire with all the windows open. How often is this rite performed in the complete absence of ventilation, with steam on the windows and in the presence of admiring, but highly infectious grandmothers and aunts.

Thus far for the more fortunate classes, but with overcrowding and housing difficulties among the less well-to-do, we have a more difficult problem. But much may be done, though, if an intelligent mother uses the mask, keeps the baby in a cot under the open window, and keeps it during the day time either out of doors or in her bedroom opposite the open window, as opposed to the stuffy kitchen.

The almost insurmountable difficulty is the parent, nurse, or other children who are what may be termed carriers—i.e., suffer from chronic respiratory catarrh. The position recurs again and again of the catarrhal mother with the catarrhal child, and I am convinced that by far the most potent cause of recurring catarrh, leading to chronic bronchitis and enlargement of the tonsils and adenoids, is infection from some one in the house renewed and re-renewed. It is possible to argue that heredity plays a part, but I do not believe it myself. It is just as frequently caused by an infected nurse. If the parents are infected prophylaxis breaks down. A nurse can be got rid of, but a mother cannot be done away with. Treatment, and the use of the mask, is the only possible method. For the rest, children should be kept away from people with colds and children's parties should be cut down to a minimum and—I want to lay stress on this—kept in a draught. Anyone who has closely observed children will agree that as far as their personal comfort goes, cold does not count.

The treatment of the catarrhal child is the prevention of fresh infection, after affected lymphoid tissue, if present, is removed. The longer that such a child can be kept " free from a cold " the more it will resist the next one. Cod-liver oil is a good stand-by.

THE TOXIC EFFECTS OF LEAD ADMINISTERED INTRAVENOUSLY. By Prof. W. BLAIR BELL, Dr. W. R. WILLIAMS, and Dr. L. CUNNINGHAM.—Owing to a misunderstanding this paper was printed before corrected proofs were received. The errors will be made good in the reprints which the authors will be glad to supply.

Medical Societies.

ROYAL SOCIETY OF MEDICINE.

SECTION OF THERAPEUTICS AND PHARMACOLOGY.

A MEETING of this Section was held on Oct. 13th, Dr. GEORGE GRAHAM, the President, being in the chair. He delivered his presidential address on

Some Difficulties in the Use of Insulin,

and began by recalling the enthusiastic welcome accorded to the new discovery of insulin at a similar meeting two years ago. Insulin had shown itself to be a very potent drug, and its use during the succeeding two years had proved to be attended with considerable danger. It was not a cure for diabetes, but so effective a counter-agent that most patients under treatment enjoyed the best of health, and their condition was only betrayed by the food on their tables. Only a comparatively small portion remained invalids and very few died. With the help of some very instructive statistics he analysed a collection of 85 patients who had been treated with insulin at St. Bartholomew's Hospital. These fell into three groups: (1) those he had personally supervised during the last two years; (2) out-patients under the care of his colleagues since January of this year; and (3) earlier patients whose after-history had been followed up. Of these, 17 had died with various symptoms, such as vomiting, pyrexia, blood poisoning, cerebral hæmorrhage, or coma. Some had refused the diet ordered. The deaths mostly occurred outside hospital, and in 12 cases there was evidence of some other disease, such as influenza, which had precipitated the fatal issue. One case, which died in hospital, had been discharged once and subsequently returned. It was fairly certain that she had not taken the prescribed diet at home; when she came back to the ward it was found that her insulin requirement had increased from 10 units to 110. She had no signs of sepsis except a discharge from the ear. She was given 100 units in the course of 15 hours, became comatose, and died after 18 hours. At the post-mortem nothing abnormal was found except that the pancreas was smaller than usual with fewer islets. The staining reactions were not quite normal but seemed to be healthy. It seemed certain that in this case there was a progressive degeneration of the islets of Langerhans which insulin was powerless to prevent; indeed, the injections given precipitated the coma.

Home Treatment.

The two difficulties encountered in treating patients at home after discharge from hospital were the estimation of the blood-sugar and the regulation of diet and insulin dose so as to keep it normal. He believed it best for the patient to maintain the percentage of sugar within normal limits if possible, although he had had cases do well with a persistently high blood-sugar. He aimed at keeping the morning value below 0·13 per cent., but the dosage of insulin required must not cause discomfort to the patient and the sugar should be kept down without insulin as far as possible. The sample of blood for estimation should be taken between 10 and 12 A.M. after an ordinary breakfast, and should not be preceded by any fast or insulin. A blood-sugar which was normal at 10 o'clock had often risen by noon, and the variation gave a rough idea of the patient's power of resistance. A high blood-sugar meant a low resistance. In some cases the blood-sugar would come down without any apparent reason and in others rise equally inexplicably. The usual dose for mild cases was 15–30 units a day, and one dose only should be given if this was possible. If a patient developed a high blood-sugar he should be instructed to raise his morning dose by 2 units at a time until the percentage fell again, but in some cases this increase might cause signs of overdose at midday without lowering the percentage in the morning sample. Sometimes two small doses instead of one large one overcame the difficulty, and to these patients an evening dose might be given. Some people, indeed, seemed able to take a bigger dose in the evening than in the morning, though usually he advised them to keep the evening dose smaller than the morning one in case hypoglycæmia should occur during the night. The speaker showed the chart of a boy of 9 years of age in whom 4 units produced at first symptoms of overdose. He had pyrexia, and a tuberculous lesion in the larynx was discovered. It was probable that he had a subacute infection of the lungs also. He was discharged from hospital in January with the blood-sugar normal. In October the blood-sugar rose and the insulin was proportionately increased. In the following January it rose again, but a further increase in the morning dose of insulin produced no effect. When, however, the evening dose was increased the percentage was controlled, and after ten months the child was still doing well. He was now having 6 units in the morning and 8 in the evening, and his diet represented 1705 calories (carbohydrate, 25; protein, 94; fat, 130). Possibly the evening dose was required to counteract the pyrexia, which tended to raise the blood-sugar.

Spacing of Doses.

Two patients under his care showed symptoms of overdose every time their insulin was increased. One woman was having an interval of only eight hours between doses, another of nine hours. The symptoms in both cases disappeared on increasing the interval to 11 and 13 hours respectively, and it was then possible to increase the insulin dosage. Patients should be warned against the danger of hypoglycæmia, but it had only occurred in two of his cases, one of whom became unconscious and the other hemiplegic. Both recovered when sugar was given, and after that it was found that the insulin requirement had decreased.

Infections.

Minor infections had the effect of raising the blood-sugar. His present practice was to increase the dose by 1 to 3 units directly a minor infection, such as a cold in the head, showed itself. It was too soon as yet to report the results of this method. Sometimes such infections were followed by a drop in the insulin requirement. When a major infection occurred the insulin dose should be increased immediately and courageously. Sometimes a patient who had been receiving 20 units might have to be raised to 200. The urine should be collected every three hours and tested for sugar, the large dose being continued until the sugar content dropped. Then the insulin was immediately stopped and none given until the sugar in the urine began to rise again. The danger came with convalescence, as hypoglycæmia was liable to supervene when the temperature dropped. Sugar must be kept ready for such an emergency.

Relation between Insulin and Exercise.

Dr. R. D. **LAWRENCE** spoke of the very marked effect of exercise in decreasing the blood-sugar, which was especially noticeable in people who constantly alternated between sedentary and active pursuits. Hard exercise might produce severe hypoglycæmia. He mentioned the case of a gardener whose diet had been constant for 18 months. Last winter his regular insulin dose was 10 units in the morning and 6 in the evening, which kept a good balance, his blood-sugar falling to 0·1 four hours after the dose. About May he started to work very much harder and also took up cricket; after one week he suffered from dizziness caused by hypoglycæmia, and in July he was keeping a good balance with 6 units once a day. At the end of that month he stopped work and cricket and his blood-sugar went up. He restored his balance with 8 units in the morning and 5 at night. Following medical advice he returned to work and found that 5 units daily were then sufficient. He now carried out urine tests nearly every day and had learned to adjust his own insulin to correspond with his activities. Another patient of sedentary habits, who had been receiving 16 units in the morning and 12 at night, suffered from hypoglycæmia two or three hours after his Sunday tennis if he had more than 10 units in the morning; 8 kept him in good condition. He went on a vigorous holiday, and for three weeks was able to double his carbohydrate intake on the same insulin dose without passing sugar. He even suffered from hypoglycæmia if he took exercise before meals. This exercise factor would account for the apparent improvement of patients on their discharge from hospital and return to active life.

Dr. Lawrence showed a very interesting chart illustrating the effect of intensive exercise on the blood-sugar after a measured meal compared with the blood-sugar if no exercise were taken. Diets were more difficult to alter, however, than insulin doses. His practice was to teach the patients to treat themselves by diet as far as possible and to increase the insulin dose, when this became unavoidable, by 2 units morning and night. All his cases had returned to normal life and on the whole were taking less insulin than Dr. Graham's, the average being 15 units in the morning and 10 at night. Some, especially coma cases who had recovered, started on 25 in the morning and 20 at night. The uniform diet he used tended to produce a uniform insulin requirement. He had had no cases of infection in the patients who were attending regularly, except for colds in the head and influenza, which had only produced glycosuria in one case.

Dr. E. P. **POULTON** showed an interesting chart made by a patient himself showing blood-sugar variations and Rotherer reactions side by side, the latter giving a more sensitive indication of his condition. He thought that mild cases did better with small doses of insulin combined with dieting than with dietetic measures alone. He quoted the case of a medical man who had had diabetes since 1906. His attacks of giddiness increased in severity in 1922, and he entered hospital and found that small doses of insulin made a great difference to him. After a month the insulin was dropped and the improvement was maintained without it. In very wasted patients insulin was dangerous without carbohydrate. He had had the same experience as Dr. Lawrence that the insulin requirement of patients tended to settle to a common level.

Dr. C. H. **BEST** (Toronto) said that the problems encountered in the birthplace of insulin were just the same as those of this country. Out-patients who attended regularly did very well, but the irregular ones caused difficulty, so much so that a special social service department had been organised at the Toronto General Hospital to keep in touch with these cases. He agreed with the President on the danger of infection and regarded it as the greatest bugbear of the clinician. There seemed no solution of the problem except early recognition and counter-action by an increased dose of insulin or modification of the diet. The path of those who did not contract infections was smooth. The first person ever to receive a dose of insulin, a lad named Leonard Thompson, was now a healthy young man. Dr. Lawrence's experiences were just what he would have expected.

Insulin in Children.

Dr. G. A. **HARRISON** spoke of the special difficulties of treating diabetic children. Since it was essential to give a diet of sufficient calories to permit growth the food intake had to be large. The difficulty was, therefore, to keep pace with these comparatively rich diets without giving too much insulin. Several American writers maintained that one injection daily was sufficient unless the dose exceeded 10 units, when it had better be divided into two or more. In several cases where large doses were necessary three or four doses were given daily before meals, and another at midnight. The multiplication of doses, however, was extremely bad for children, partly because of the hardening effect on the skin and partly because of the alarm caused to the child by the whole process of injection. In fact, parents were often unable to give the insulin for this reason. The maximum number should therefore be reduced to two if possible, but severe cases tended to show a rise in the blood-sugar after a night's rest. With careful spacing of meals, however, and a 10- or 12-hour interval between doses the blood-sugar could often be kept down. Parents should be told to supervise the exercise of the children in order to prevent a sudden drop in blood-sugar from this cause. In children intercurrent sepsis was liable to be very sudden and serious. The prescribed diet was very difficult to give when the child was sickening for some infection and the doctor, hearing that all the food was not being taken, was liable to fear hypoglycæmia and reduce the insulin. Unless he could test the blood-sugar often it was difficult to recognise the true cause of the anorexia. Insulin should never be stopped entirely, even if no food were being taken at all, as a patient suffering from an acute illness might have a large carbohydrate store. The family doctor must strike a balance between the factors of increased requirement and decreased tolerance. It was far better to send the child to a nursing home, but in the interval he might as a general rule substitute milk for the prescribed diet, as it was the only food most sick children would take. If the normal dose of insulin were 10 units it should be reduced to 5; if over 10, then two-thirds of the usual dose should be given. Sugar should be kept handy, but insulin should never be given at the same time as glucose. After 24 hours, when the glycogen stores were depleted, a little might be given. The hypoglycæmic reactions of children were not so marked as those of adults; often an attack started with fretfulness and then the child became quiet and pale. It was naturally extremely difficult to distinguish these signs from those of pyrexia. He summarised the difficulties as inverse to the facilities for blood-sugar estimations.

High Blood-sugar a Mendelian Recessive.

Dr. P. J. **CAMMIDGE** remarked that it seemed to be assumed that all forms of diabetes were essentially the same. In his opinion there was a vital difference between the adult and the childish form. Juvenile diabetes had a distinct ætiology and origin. He had recently undertaken some research which would indicate that a constitutional high blood-sugar was a Mendelian recessive character. An animal with high blood-sugar produced a normal progeny, but the offspring of these showed a Mendelian proportion of individuals with high blood-sugar. Mice illustrated this principle very clearly and probably other animals would also. If it was, as he believed, a true Mendelian recessive it would almost certainly appear in man as well. He had come to the conclusion that there was no such thing as a normal blood-sugar, but that individuals varied between wide limits. Low blood-sugar might also be recessive, but the experiments on this were not yet complete. The theoretical reason for these results lay in the interaction of the endocrine secretions. Definite chemical experiments had proved that insulin and adrenalin had opposite effects upon the activity of certain glycogen ferments. Insulin and pituitary extract, on the other hand, did not have opposite effects but chemically neutralised one another. Excessive doses of insulin therefore tended to exhaust the pituitary and set up diabetes insipidus in a mild form. Another influence in elderly diabetics was hyperthyroidism. There was no activity between thyroid and insulin, but the thyroid activated the adrenalin which opposed the insulin. If the thyroid were diminished by diet and treatment signs of overdose of insulin tended to appear.

A great deal of difficulty arose from always doing tolerance tests with sugar. It was rapid and easy, but people ate other things besides sugar, and much truer results were obtained from testing after an ordinary mixed meal. Another source of error was the practice of giving insulin half an hour before a meal and making the tolerance test three-quarters of an hour after. By this method the maximum of insulin reaction was reached considerably before the maximum food reaction, especially in hypothyroidic patients. If the insulin were given earlier, say an hour or an hour and a half before the meal, the maxima would be more likely to coincide.

NEWCASTLE-UPON-TYNE AND NORTHERN COUNTIES MEDICAL SOCIETY.

THE first meeting of the session was held in the Royal Victoria Infirmary, Newcastle, on Oct. 8th, when Dr. **NEIL MACLAY** delivered his inaugural presidential address on

Modernism in Medicine.

As an observer of medical life for 30 years he had been able to view it from two different standpoints. First as a general practitioner, and later from the somewhat narrower sphere of a specialist. This had been a period of great changes and advances in medicine, but nevertheless there were disquieting signs of retrogression. On all sides there was a steady growth of superstition, both in religion and medicine, and an inclination on the part of the public towards quackery. Dr. Maclay went on to deal with the part which medical men might play in combating these influences. The crowded curriculum of the student intensified the difficulties. As a result newly qualified men seemed to be now less able to judge what was commercial quackery and what scientific truth.

Exhibition of Clinical Cases.

Mr. J. S. **ARKLE** showed various ophthalmic cases, the chief of which were (1) a recent extensive hæmorrhage into the vitreous in a woman of 24, seven months pregnant; (2) ruptured choroid following concussion; (3) a severe neuro-retinitis with well-marked "star" figure at the macules, in a patient without any obvious cause.

Mr. **JOHN CLAY** showed a man, aged 36, from whom he had removed an astragalus 16 years earlier after an injury. Since then the man had been able to serve as an infantryman in the Army and pursue heavy work regularly.

Dr. **HORSLEY DRUMMOND** showed a case of aortic aneurysm with dislocation of the inner end of the clavicle; also cases of mediastinal tumour and subacute combined degeneration of the cord.

Dr. H. E. **GAMLEN** demonstrated various radiological films.

Dr. W. E. **HUME** showed a case of erythræmia in a man of 48, where the symptoms had started six months earlier with hæmoptysis; also cases of crossed paralysis from pontine softening and auricular fibrillation treated with quinidine sulphate.

Mr. C. G. **IRWIN** showed a case of extensive syphilitic osteitis of the skull which appeared in spite of previous antisyphilitic treatment.

Dr. F. J. **NATTRASS**: A case of myasthenia gravis; a woman of 26 with weakness of palate and external ophthalmoplegia.

Dr. A. **PARKIN**: A case of tuberculous spine with pressure myelitis in a child, and cases of different types of aneurysms.

Mr. F. C. **PYBUS**: A case of trigeminal neuralgia successfully treated by operation; also cases of axillary aneurysm and congenital dislocation of the hip.

Mr. R. J. **WILLAN** demonstrated a group of cases with pyelographic records which illustrated the value of pyelograms in localising and differentiating kidney lesions. These were congenital cystic kidneys in an adult woman; a woman with right-sided pyonephrosis; a case of left-sided hydronephrotic kidney.

Reviews and Notices of Books.

TEXT-BOOKS OF MEDICINE.

Taylor's Practice of Medicine. Thirteenth edition. By E. P. POULTON, M.D. Oxon., F.R.C.P. Lond., Physician to Guy's Hospital; formerly Radcliffe Travelling Fellow and Beit Memorial Research Fellow. With the assistance of C. PUTNAM SYMONDS, M.D. Oxon., F.R.C.P. Lond., Assistant Physician for Nervous Diseases, Guy's Hospital; formerly Radcliffe Travelling Fellow; and H. W. BARBER, M.B. Camb., F.R.C.P. Lond., Physician-in-Charge of Skin Department, Guy's Hospital. London: J. and A. Churchill. 1925. With 48 plates (8 coloured) and 93 text-figures. Pp. 1063. 28s.

Dr. E. P. Poulton has again produced a revised edition of the late Sir Frederick Taylor's famous text-book. The extent of revision rendered necessary by the advances of medical science may be gathered from the fact that new articles have been added dealing with meliodosis, tularæmia, ectoscopy, manganese poisoning, Mönckeberg's degeneration, the recent work on the ætiology of cancer, and half a dozen other subjects, whilst the authors have had to rewrite or largely revise their previous articles on anaphylaxis, jaundice, pernicious anæmia, the spleen, cerebro-spinal fluid, epilepsy, and many other equally important topics. In addition to these revisions and amplifications, there are several new features which call for special comment. In the first place, Dr. Poulton has seen fit to introduce at the end of each section a list of important references, with numbers corresponding to places in the text. In this manner he has not only eliminated from the text many unnecessary quotations, but he has provided for his readers a selected bibliography most useful as a guide to further reading at a time when medical literature has become so ponderous. The illustrations too in the new volume have undergone considerable improvement. A generous provision of radiograms enables the student to make a proper study of this increasingly important aid to diagnosis. The eight new coloured plates include excellent illustrations of normal and abnormal leucocytes. It is perhaps open to question whether the plate of nucleated red cells facing p. 520 is of sufficiently common interest to merit inclusion. If so, it requires more detailed explanation than is at present to be found in the text.

A survey of the text confirms a previous impression of accurate and scholarly writing. Those who are not reading the book from cover to cover would do well to turn to Dr. Poulton's articles on asthma, diabetes, pernicious anæmia, and peptic ulcer. Laboratory tests are given their proper place, although it is curious to see so little stress laid on frequent measurement of the specific gravity of the urine as an index of renal efficiency. Yvon's method of estimating blood-urea is given preference to the more useful analytical methods of Folin. The section dealing with diseases of the central nervous system has again been written by Dr. C. Putnam Symonds, who has revised or rewritten the articles dealing with examination of the cerebro-spinal fluid, neuritis, cerebral diplegia, epilepsy, and several others. New and excellent photographs illustrate the topical diagnosis of lesions of the cord by means of lipiodol injections. The section, while it contains only what is necessary for the use of students and practitioners, achieves a high standard. The full description of rheumatic chorea included in this section might with advantage be transferred to the chapter on rheumatic fever. Dr. H. W. Barber once more deals with the diseases of the skin, and this section, too, is now enriched with coloured illustrations to its countless benefit. This section of the book has always been well done as far as that was possible without pictorial help. The illustration of psoriasis facing p. 939 might be improved. Dr. Barber has adopted the classification of Dr. Darier, to whose famous book he acknowledges his indebtedness, but the section as it stands bears the stamp of Dr. Barber's own extensive experience and learning.

To have accomplished all this within three years of the previous edition is a tribute not only to the learning and industry of Dr. Poulton and his collaborators, but also to the deserved popularity of the work among students and practitioners.

A System of Clinical Medicine. Seventh edition. By THOMAS DIXON SAVILL, M.D. Lond. London: Edward Arnold and Co. 1925. Pp. 1004. 28s.

THIS carefully planned text-book dealing with disease from the standpoint of symptomatology was first published over 20 years ago, and may now be said to have established its position as a modern classic. Since Dr. Savill's death in 1910, just after the publication of the second edition, the task of keeping the subsequent issues up to date has been ably performed by his widow, Dr. Agnes Savill. The seventh edition has in considerable part been rewritten and fully revised, though in bulk the volume has increased by some 50 pages only; for assistance in this labour Dr. Agnes Savill expresses her indebtedness to Dr. Harry Campbell, Dr. J. Strickland Goodall (Diseases of the Heart), Dr. J. D. Rolleston (Fevers), Dr. S. W. Patterson (Diseases of the Stomach and Liver), Dr. Angus MacGillivray (Diseases of the Eye), Dr. Robert Cole (Mental Diseases), Sir James Dundas-Grant (Diseases of Ear), Mr. Philip Franklin (Diseases of Nose and Throat), Colonel W. S. Byam (Tropical Diseases), Prof. Louise McIlroy (Diseases of Women), Dr. Skene Keith (Immunity), Dr. Leonard Williams (Thyroid Gland), Dr. Langdon Brown (Diabetes Mellitus), Dr. Gordon Ward (Diseases of Blood and Spleen), and Dr. V. E. Sorapure (Basal Metabolism and Animal Measurement). Dr. Thomas Savill's plan of designing a text-book of medicine "from the patient's point of view," was no simple matter to carry into effect, but there can be little doubt that his ambition has been fulfilled, nor is anything neglected in the way of ætiology, pathology, and treatment to make the work complete. Important diseases are indicated by the use of large type, rarities are described in smaller type, and abundant cross references are given to avoid repetition and increase the utility of the book. We can with increasing confidence recommend for the seventh time "Savill's Medicine" to senior students and practitioners on the look-out for a sound summary of clinical diagnosis.

The Principles and Practice of Medicine. By the late Sir WILLIAM OSLER, Bt., M.D., F.R.C.P. Lond., F.R.S. Tenth edition, thoroughly revised by THOMAS MCCRAE, M.D., F.R.C.P. Lond., Professor of Medicine, Jefferson Medical College, Philadelphia. London and New York: D. Appleton and Company. 1925. Pp. 1234–xxxxi. 30*s.*

"The Principles and Practice of Medicine" first appeared over 33 years ago, and those who have read the biography of Sir William Osler by Harvey Cushing will have noted the large part which this text-book took in Osler's life. The value of the book is so well known and universally recognised that it requires no further commendation on our part; in the tenth edition, which has been thoroughly revised by Prof. McCrae, a constant effort has been made to retain the features characteristic of its author, who "felt that a text-book should contain well-established knowledge and not every new wind of doctrine." Since the previous edition which passed through Prof. McCrae's hands there has been a complete resetting of the book, and many subjects which are new or the discussion of which is altered have now been incorporated, among them scarlet fever, car and sea sickness, carbon monoxide poisoning, epidemic diaphragmatic pleurodynia, many tropical and local diseases, hypotension and hypertension, and so forth. Additions have been made throughout to the sections on symptoms and signs, diagnosis and treatment, the aim being to include material which is of established value. This edition will not only maintain but enhance the reputation of its predecessors.

A Synopsis of Medicine. Fourth edition. By H. Letheby Tidy, M.D., B.Ch. Oxf., F.R.C.P. Lond., Assistant Physician to St. Thomas's Hospital; Physician to the Royal Northern Hospital. Bristol: John Wright and Sons, Ltd. 1925. Pp. 1000. 21*s.*

This synopsis was first published in 1920, and the measure of its success may be gauged by the present appearance of the fourth edition, revised and enlarged. The most extensive alterations are in the chapters on diabetes, and have been necessitated by the rapid advance of knowledge since the discovery and use of insulin. The article on jaundice has also been rewritten, and is based on the views of MacNee. Other articles which have been entirely, or almost entirely, rewritten include botulism, visceroptosis, hæmatoporphyrinuria, infarction of the lung, primary purpura, and acholuric jaundice. Considerable alterations have been made in the chapters on gall-stones and bronchial asthma, while that on splenic anæmia has been recast. New chapters have been added on blood diseases of childhood and on thrombosis and embolism. The object of this précis of medicine is to assist those who have to revise rapidly their knowledge of medicine in general or of some disease in particular—the worried student, the general practitioner, or possibly even the teacher—and Dr. Tidy's painstaking work, in fulfilling this purpose, has met with the success which it deserves.

CLINICAL FEATURES OF HEART DISEASE.

An Interpretation of the Mechanics of Diagnosis for Practitioners. By Leroy Crummer, M.D., Professor of Medicine, University of Nebraska. New York: Paul Hoeber. London: Henry Kimpton. 1925. Pp. 353. 12*s.* 6*d.*

The introduction of new methods in diagnosis may temporarily upset the sense of perspective, but in the course of time such methods find their level, which is generally to supplement rather than to replace those which have been previously in vogue. The cardiologist of to-day is fully prepared to admit the extent of his debt to the work and teaching of the great clinicians of the past. Many of their doctrines have stood the test of time, while others have had to be discarded in the light of more recent knowledge; but to restate those doctrines more clearly or more convincingly than they have been stated by the writers of past generations is no easy matter. As his text Dr. Crummer takes a concisely worded document prepared by the American War Department in 1917 for the guidance of medical officers employed in the examination of recruits. He deals in turn with the various important facts which may be elicited in taking the history of a cardiac case, with the different methods of physical examination, with valvular disease, and with other branches of the subject. His views on the components of the first heart sound arising in the right and left ventricles respectively are interesting; but apart from this he adds little to what has been written before. Some of the terms employed, such as the "onward" murmur, are unfamiliar to the English reader. The author appears to take an unduly pessimistic view of the clinical powers of the modern physician when he says that "Even when . . . . obtained or corrected by the most experienced members of the staff . . . . the history is quite apt to be absolutely worthless," or again, that "the discovery of albumin in the urine no matter what the source is called Bright's disease." In the treatment of auricular fibrillation he expresses the opinion that "a sudden reduction in heart-rate to 80 or below indicates overdosage with digitalis." This is over-cautious. In a book of this size it is not possible to discuss the evidence on which statements of opinion are based, and the impression is left that the author has attempted to cover too wide a field.

SURGERY.

Some Encouragements in Cancer Surgery. By G. Grey Turner, F.R.C.S., Surgeon to the Royal Infirmary, Newcastle-upon-Tyne. Bristol: John Wright and Sons. 1925. Pp. 75. 7*s.* 6*d.*

This is an account of a wonderful series of patients with advanced cancer who have been operated upon by the author and who have lived for many years without recurrence or have died only after a long respite of apparent health. As was to be expected, these gratifying results have been obtained more particularly in certain types of growth, or in cancer in certain situations. It is strikingly brought out how successful operative treatment may be in carcinoma coli, and a very remarkable case is the complete cure of a man with a chondrosarcoma of the tibia. There is a certain excuse for the gloomy outlook which prevails in the minds of many surgeons with regard to the operative treatment of malignant disease, but no one could fail to be spurred to increased efforts along recognised surgical lines by reading this book. Mr. Grey Turner has done a great service in recording these results.

Chirurgische Operationslehre. Fourth edition. By Prof. Dr. Friedrich Pels Leusden. Berlin: Urban and Schwarzenberg. 1925. Pp. 832. M.18.

This well-known text-book has an established position which it is likely to retain, for it has been brought thoroughly up to date. It is a rather larger book than the average English student reads, as it is very comprehensive. Many operations which have very seldom been done are described. This is one of the features which add to its value, as also the fact that minor surgical operations are not neglected. It reflects, of course, German teaching; but this does not make it very different from the usual English text-book, for surgical practice all over the world tends increasingly to conform to a single standard. The book can be recommended.

THE EVOLUTION OF ANATOMY.

A Short History of Anatomical and Physiological Discovery to Harvey. Being the substance of the FitzPatrick Lectures delivered at the Royal College of Physicians of London in the years 1923 and 1924. By Charles Singer, M.A., M.D., F.R.C.P. London: Kegan Paul, Trench, Trübner and Co., Ltd. 1925. Pp. 209. 12*s.* 6*d.*

Dr. Singer in his two courses of lectures has set forth in a pleasing and scholarly manner the growth of anatomical, and to some extent of physiological, knowledge. He begins with allusions to the dawn of anatomical ideas as exemplified in drawings of animals from the Magdalenian caves and by a model of an arm from Knossos, and then passes in rapid review such knowledge of anatomy as was exhibited by Assyrians, Egyptians, Greeks, and Romans. He includes the great poem of Lucretius under the head of Latin anatomical literature, but we cannot agree in his dictum that "as an observer he (Lucretius) is negligible." Of course, he occasionally made gross mistakes, but his observation of ordinary natural phenomena was singularly acute, a fact which every commentator has noticed. In his section upon mediæval anatomy Dr. Singer refers to a drawing in an MS. of Guy de Vigevano preserved in the Musée Condé at Chantilly, representing a dissection, and remarks: "The relation of the dissector to the subject in this and other miniatures of the same MS. shows that the body was suspended." Dr. E. Wickersheimer, however, in his paper on the same MS., published in the *Archiv für Geschichte der Medizin*, 1913, considers that the upright position was a traditional method of representation and probably originated from the fact that in this position it was far more easy to show the action of the surgeon in making incisions. Almost the entire latter half of the book is devoted to Vesalius and Harvey, whose researches are described with a simple clarity worthy of imitation by other writers who may feel inclined to discuss similar matters. Dr. Singer concludes by reminding his readers that William Sharpey, the first holder of the first chair of physiology established in England, was himself a student of Padua.

A TEXT-BOOK OF OARSMANSHIP.

By GILBERT C. BOURNE, Secretary of the Oxford University Boat Club, 1884 and 1885. Oxford University Press. 1925. Pp. 376. 18s.

THE author has carried for so many years a name of such weight among those who are experts in rowing, judges of its art, and instructors of famous crews, that his considered opinions, after 40 years' experience of Oxford oarsmanship, are entitled to respect. This work began as an essay written in undergraduate days; the author was firmly established in correct principles by the celebrated Dr. Warre while at Eton, so that the book contains the conclusions of a lifetime's study of the subject. It deals in order with the theory of rowing, the art of rowing, oars and boats, coaching, and muscular action in rowing. It is with the last of these sections that we are called upon to deal particularly. These chapters do not pretend to be written for the anatomist, but they seem to be admirably suited to the purpose the author has in view. An intelligent oarsman, especially if supervised by a coach who has good knowledge of and belief in the value of the subject, ought to find these anatomical details of great use to him in his effort to understand how the greatest amount of work may be got with the least expenditure of effort. The short accounts of muscles and their actions are correct and excellent, and sufficiently full to present a picture, while the figures in the text are clear and good; it may be pointed out that the coraco-brachialis is wrongly labelled in Fig. 48. Attention should, however, be called to the common but mistaken notion that the humerus and scapula move at different times when the arm is raised above the head, for the swing forward is essentially an act of raising the arms above and in front of the head. The analysis of the act of raising the arm, recognising the necessity of fixing the scapula, thereafter speaks of the raising of the humerus on the fixed bone, and of the amount of upward raising made possible by the additional rotation of the scapula; but it must be understood that the two motions are not consecutive but concurrent. The scapula begins to move at the same time as the humerus, although more slowly, and its movement continues throughout the greater part of the raising of the arm. In other words, the scapula is overfixed from the beginning, affording in this way a point d'appui for the action of the humerus. In this complex the trapezius acts alone at first and the serratus magnus comes in automatically at a certain point; it cannot be brought in before this, and the trapezius cannot by itself manage the whole affair. The lower fibres of the trapezius are mainly concerned, the middle fibres coming in toward the end of the movement to give the final touch to the scapular action. The upper fibres have little to do beyond giving active support, and it seems not improbable that the contracted condition of these fibres observed at the end of the forward swing, in overreaching, or even in turning the oar off the feather, may be really associated with an effort to lift up the head. We have laid some stress on this because an appreciation of its bearing may lead to modification of some of the theoretical views advanced by the author when dealing with the movements concerned; but it is naturally impossible to be sure of what does take place, exactly and fully, and in practice it probably matters little whether the teacher makes use of the correct description or the correct but misleading analysis. We confess to some doubt about the action of the gluteus maximus, at any rate in the first part of the stroke, but this, again, is of secondary importance, and the chapters on muscular action may be commended for their clearness and practical value.

The rest of the book is of the same high level in exposition and is illustrated by clear and useful diagrams and drawings. The work is, in fact, most interesting; to anyone who has ever handled an oar, however incompetently, it is fascinating. The whole production is of that excellence which we are accustomed to associate with the Oxford Press.

JOURNALS.

JOURNAL OF INDUSTRIAL HYGIENE. August, 1925. —W. I. Clark and E. B. Simmons describe their own observations over a period of 14 years upon the dust risk in the abrasive industry, where such artificial abrasives as aluminium oxide (emery) and silicon carbide (carborundum) are made and handled. Results of clinical and X ray examinations are given, together with a statement of the occurrence of pulmonary tuberculosis. The conclusion is arrived at that inhalation of these dusts does not lead to fibrosis, and that the use of artificial abrasive wheels, instead of sandstone wheels, reduces the risk of pneumonoconioses for grinders to an enormous extent. The negative evidence against emery and carborundum here given is of particular importance.—P. K. Thomson reports upon investigation into whether small amounts of zinc from biologic material ashed by the incineration process can be recovered. The volatility of zinc suggested there was considerable risk of losing the metal during incineration. A series of experiments made are carefully described, and the author found that even small amounts of zinc can be easily and safely detected after biologic material has been ashed at 450° C.—A new hazard in industry is reported by W. B. Castle, K. R. Drinker, and C. K. Drinker as occurring among workers employed in applying a luminous paint containing radium. Five cases of necrosis of the jaw were discovered. The necrosis was a chronic progressive condition closely resembling that resulting from phosphorus poisoning. There were opportunities for the paint to be smeared on the fingers and so absorbed through the skin, or even swallowed through the practice of pointing paint brushes in the mouth; but the inhalation of dust presented another source of risk. The luminosity of the material enabled its deposition as dust on chairs, tables, clothes, and even on the skins of the workers to be easily demonstrated. The reporters, although not considering their investigation absolutely conclusive, state their opinion that the necrosis is due to the radium paint. Blood examinations demonstrated an over-exposure to radium. Radium is deposited in bone, and literature presents cases of jaw necrosis among those who have received radium treatment for mouth cancers. This paper is clearly of interest to those using radium for remedial purposes. —— September: A method for sampling dust in alveolar air is reported by R. M. Thomson, who shows that such dust can be sampled directly by using Owen's jet dust counter, Kotze's konimeter, or Hill's dust counter, in conjunction with Haldane's alveolar air sampler. Analyses of exhaled air justify the assumption that samples of true alveolar dust are obtained by this method. A description of experiments in sampling alveolar dust is given, illustrated by photomicrographs. The method possesses a broad field of usefulness in studying the actual particles reaching the lungs of persons engaged in dusty trades, and it is apparently adaptable for use in analysing problems of bacterial inhalation in infected atmospheres.—A long and important article appears by M. Oppenheim on the statistics, definition, and clinical aspects of occupational dermatitis. This capable summary, based on Prof. Oppenheim's work over many years at Vienna, cannot fail to be of great interest to industrial physicians. It is, however, a summary, and its contents cannot be shortly exposed.

Reports and Analytical Records.

(1) "TABLOID" DIGITALIS LEAF (1 gr.); (2) "TABLOID" IODICIN (0·03 g.).

(Burroughs Wellcome and Co., Snow Hill Buildings, London, E.C. 1.)

(1) The administration of dried digitalis leaves in cases of organic cardiac disease is credited with physiological results of a uniform character. But there has been uncertainty as to the glucosidal content of the leaves which varies with the kind of seed, the method of collection and drying, and, of course, with the accurate physiological control of the finished drug. A welcome will therefore be extended to a 1 gr. product of digitalis leaf under the "Tabloid" brand. The cultivation of the digitalis has taken place at the "Wellcome" Materia Medica Farm at Dartford, where pains have been taken that the seed should be of the correct variety, and that the leaves are gathered and dried in the correct manner. Finally, the drug has been subjected to physiological control by the laboratories of the firm. The tabloids are issued in bottles of 25 and 100.

(2) "Tabloid" Iodicin (0·03 g.) (with chocolate base) provides a means for the prolonged administration of iodine to children. It is palatable and odourless, the chocolate base being designed to make the product acceptable to young patients. Its medicinal constituent, Iodicin, a calcium salt of iodoricinoleic acid, contains a high percentage of iodine in organic combination. One "Tabloid" Iodicin, 0·03 g., secures the administration of 0·01 g. (approximately $\frac{1}{6}$ gr.) of iodine. Iodicin is unaffected by the gastric juice and is absorbed only after passing into the duodenum. It is particularly suitable for prolonged administration as it does not cause digestive disturbance or iodism. It is issued in bottles of 25 and 100. The suggested prophylactic dose is one "Tabloid" product weekly, the curative dose from two to three products weekly up to one daily for 30 days. The drug meets the need arising out of the well-known Austrian and Swiss experiences in respect of goitre, which have been confirmed both in the United States and New Zealand.

(1) AGAROL BRAND COMPOUND (WARNER); (2) IDOSAL.

(Francis Newbery and Son, Ltd., 31-33, Banner-street, London, E.C. 1.)

(1) Agarol Brand Compound is a preparation of modified mineral oil with phenolphthalein and agar-agar. It is a homogeneous emulsion free from alkalies and sugar, and evidence is forthcoming that it acts as the named constituents suggest that it should. Thus it is a lubricant mixing with waste matter, rendering it soft and adding to its bulk, a normal bowel activity being in this way aided. The preparation is manufactured by Messrs. William R. Warner and Co. in New York.

(2) Idosal is a combination of the iodide and chloride of sodium, carbonate of magnesia, and phosphate of calcium, and has been recommended by medical men as a useful method of administering iodine in an assimilable form. Its description as a "supertonic table salt" is correct, but a warning is properly added upon the bottle that it should only be used as an ordinary table salt in moderation. The active ingredient is a prophylactic against goitre and useful in hypothyroidism, and having a definite iodine content can be recommended for therapeutic use. We noticed recently another preparation with similar claims to value in the treatment of goitre, and refer readers to an annotation which appeared in The Lancet of Sept. 19th, p. 615. The successful results obtained in different parts of the world in the treatment of endemic goitre by means of iodine are there recorded, though the ætiology of the disease has not been made as clear as the treatment.

(1) DOUBLE CREAM SOYA MILK AND YEAST; (2) SOYA MILK (SYNTHETIC MILK IN POWDER FORM) DOUBLE CREAM (UNSWEETENED).

(The Garden City Pure Food Co., Ltd., Letchworth, Herts.)

(1) *Double Cream Soya Milk and Yeast.*—This yellowish brown powder mixes with water in all proportions. It has a slightly saline and distinctly "meaty" flavour. On analysis the preparation was found to have the following composition:—

Moisture	2·00	per cent.
Ash	8·38	,,
Fat	56·70	,,
Protein	16·80	,,
Nitrogen-free extract	16·12	,,
Calorie value per lb.	2858	

Starch, cane-sugar, and reducing sugars were absent.

This material contains an unusually large percentage of fat and this, in conjunction with the protein, accounts for the high caloric value. The entire absence of starch and sugars, the ready miscibility with water (when a whisk is used), the high fat content, and the "meaty" flavour go to show that in this product the makers have furnished a valuable and highly nutritious addition to the limited dietary suitable for the use of diabetic patients.

(2) *Soya Milk (Synthetic Milk in Powder Form) Double Cream (Unsweetened).*—This is a yellowish powder, which, when mixed with water, produces a fluid very closely resembling a rich milk in appearance and flavour. When analysed the following figures were obtained:—

Water	2·24	per cent.
Ash	6·06	,,
Fat	66·00	,,
Protein	12·25	,,
Nitrogen free extract	13·45	,,
Calorie value per lb.	3139	

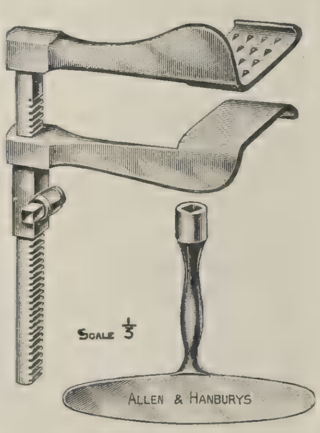
Starch, cane-sugar, and reducing sugars were absent.

For the purposes of comparison it may be noted that ordinary dried milk contains 25–27 per cent. of fat. The claim of the manufacturers that this milk may be valuable to persons suffering from diabetes is substantiated by the analytical data.

New Inventions.

A MODIFIED TUFFIER'S THORACOTOMY RETRACTOR.

After using Tuffier's thoracotomy retractor for several lung cases, I found the instrument was often unsatisfactory. The retraction obtainable by this instrument is usually inadequate owing to the difficulty in opening the blades by means of the thumb screw, attempts to do this often resulting in torn gloves. De Quervain's retractor, although mechanically efficient—retraction being controlled by means of a ratchet or cross handle—I find too unwieldy for general use. I have therefore had made a modification of Tuffier's retractor fitted with a powerful ratchet screw, which is operated by a removable T-shaped key (see illustration). This instrument has the advantage of being small and yet sufficiently powerful to give good retraction. Furthermore, the key can be removed and does not hamper the operator. Messrs. Allen and Hanburys, of Wigmore-street, are the makers.



Cecil P. G. Wakeley, F.R.C.S. Eng.

THE LANCET.

LONDON: SATURDAY, OCTOBER 24, 1925.

NON-UNION IN FRACTURES.

THE factors influencing the normal growth of bone are as yet imperfectly known; still less reliable knowledge have we of processes essential for the union of the fracture of an adult bone. That general metabolic derangement has a potent influence, the existence of bone changes in acromegaly and other diseases shows. It is therefore not surprising that unfavourable conditions of general health have always been held to cause delay in the healing of fractures. But in numerous cases of hindered union this factor can be definitely excluded. The cause seems to be a local one.

A fortnight ago we published a lecture by Prof. E. W. HEY GROVES, who reviewed such causes, voiced his own opinions, and gave advice as to treatment. He believes that one important cause of delayed union is unrestricted mobility, and he makes a very important distinction between two forms of non-union. In the one the unifying process seems simply in abeyance; the bone-ends, in X ray plates and if cut down upon, appear just to have remained unaltered from the time of the accident, whilst in the other there has been much activity of the bone-ends which have become sclerosed and eburnated, give a darker shadow with X rays, and are joined by dense fibrous tissue. The first variety will often yield to non-operative measures, whilst the second calls for them. Prof. GROVES insists that proper fixation is essential for union to take place. On this point Mr. J. W. DOWDEN joins issue with him in a letter appearing elsewhere in this issue. In an experience of 25 years he has but once met a fracture which would not unite, and that was of the clavicle, a result he attributes to having adopted the principle of mobility in the treatment of fractures. It does not seem likely that union would be favoured by free movements of the bone-ends on one another, a movement which would break down the adhesions between the opposing layers of granulation tissue. A laparotomy wound would certainly not heal if constantly dragged open. The granulation tissue bond must quite obviously remain intact for union to take place. This does not prohibit movements of surrounding muscles and neighbouring joints, and even a non-destructive bending of the granulation tissue junction at the site of fracture. Such movements improve the local circulation, empty the clogged lymphatics, and generally promote the healing process. Limited movements have proved their worth in the treatment of fractures. There is probably no real conflict of opinion on the subject of mobility, for the one surgeon advocates fixation of the fragments with movement of neighbouring joints whilst the other in recommending mobilisation treatment insists that movements should be active in character and painless. A patient with a fracture cannot very well be induced to move his limb enough to cause actual disturbance of the relation of the bone fragments to each other, for this provokes great pain and by reflex muscle spasm limits the causative effort.

In spite of careful treatment surgeons do meet with cases of non-union, and Prof. GROVES's classification into two types is of great practical importance. In the form in which cell activity fails, measures which further local nutrition should be instituted, a fact which suggests that such non-union may depend upon injury to the nutrient vessels occurring as part of the original accident. The slow repair after plating operations can certainly be attributed to extensive stripping of the periosteum which sometimes is unavoidable. When firm fibrous union with eburnated bone-ends occurs, an operation which removes the sclerosed tissues and opens up new paths for the osteoclasts becomes necessary. This points to some barrier to the growth of osteoblasts across the interval between the fragments being present from the first, since bone formation in the actual bone-ends is stimulated. The obstruction can conceivably be intucked periosteum, which as MACEWEN showed opposes great resistance to the through passage of bone-cells and possesses, in fact, bone-absorptive, as well as bone-forming properties. Nothing but an open operation will remove such an obstruction and allow the normal healing process to proceed. In the treatment of fractures both fixation and movement have their place. To apportion the right relative value to them, perhaps, would be to say that fixation of the bone-ends is an essential, whilst movement of the surrounding soft parts is desirable.

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THE MELANOMATA.

THE suggestive fact emerges again and again that the advances of morbid anatomy are often incompatible with the most sacred dogmata of orthodox biology. Thus, the "law" of the "specificity of the germinal layers" decrees that, once these layers are formed in the embryo, they proceed in their differentiation in certain directions only and give rise only to certain kinds of tissue for which they are "predestined" by this law. When, for instance, the formation of mesenchyme by budding from the primary germinal layers, the cells of which are of an epithelial habit, ceases, it ceases for ever. From now onward the cells of the ecto- meso-, and endo-derm remain epithelial. We may well ask: Why should a process that takes place upon an extensive scale during the early stages of development necessarily terminate at the precise moment at which it ceases to be observed by embryologists? May it not be that the capacity is now merely latent normally but subject to revival by the action of a pathological change? It might be well for biologists, before they tell pathologists that their education has been neglected when they describe phenomena that are contrary to "biological laws," to ask themselves if these "laws" do not, perchance, require revision in the light of pathological knowledge. There have been heterodox biologists—to mention only MAURER, SCHUBERG, and more especially RETTERER, who claim that mesenchyme formation continues throughout life. It is to be feared that their writings are not much read. RETTERER insists that practically the whole of the cutis is derived from the epidermis by post-embryonic budding of its cells.

Pathologists can, of course, form no authoritative opinion of the merits or demerits of writings which are concerned with the phenomena of normal growth, but there are many instances of abnormal growth of an analogous nature which are within the province of pathology. The whole of the October issue of the *Edinburgh Medical Journal* is given up to a monograph [1] by Dr. J. W. DAWSON upon the melanomata, which is heretical and open to the severest disapprobation of orthodox biologists since he is unafraid to tell us what he has learned from the study of his material. He has approached his subject with an unbiased mind and, after careful consideration of the contending views, has been driven to the conclusion that the melanomata are epithelial tumours, the result of post-embryonic, pathological attempts at the conversion of epithelium into mesenchyme, attempts that are often crowned with success. The idea is not new. It was propounded nearly 40 years ago by KROMAYER, UNNA, and others, and has since then gained an ever-increasing number of adherents. Dr. DAWSON'S material is rich and well digested. His illustrations are admirable, and unlike so many morbid anatomists he realises that they form the surest proof of his arguments. His conclusions fall into two groups. He shows that the pigment melanin is produced solely by the epithelial cells of the ectoderm—i.e., the epidermis and its appendages and the central nervous system. True "melanoblasts" are epithelial cells which may, however, enter the deep tissues. They are distinct from the mesenchymal "chromatophores" which ingest the pigment by phagocytic action but do not produce it. He traces the formation of the "nævus" cells from the epithelium in cutaneous moles and the melanotic tumours which arise in them. With the help of beautiful drawings he shows the extreme polymorphism that the cells of these tumours assume and that the melano-carcinomata, -sarcomata, -fibro-sarcomata, &c., are but different forms of the same tumour. He concludes that even the most "sarcomatous" melanomata are epithelial tumours and extends this conclusion to the ocular melanomata. It is to be regretted, for the sake of completeness, that he does not deal more fully with the rare recorded instances of melanomata of other parts of the body. Dr. DAWSON does not go so far as KROMAYER and admit a complete "desmoplasia" (or assumption of all the characters of connective tissue) of epithelial cells. He is perhaps wise not to do so. His paper is a valuable contribution to the question of the specificity of the germinal layers, which will have to be considered not only by pathologists but by general biologists.

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[1] The Melanomata: their Morphology and Histogenesis. By James W. Dawson, M.D., D.Sc., F.R.C.P.E., Histologist, Royal College of Physicians' Laboratory, Edinburgh.

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A CONQUEROR OF INSECT PESTS.

Prof. MAXWELL LEFROY, whose obituary notice appears on another page, was perhaps the foremost economic entomologist in the British Empire. In the course of his career he had three really spectacular successes. The first was when he went to the West Indies. The sugar-cane, on which the prosperity of the islands depended, was being destroyed by a beetle which bored into the stems. LEFROY discovered that the eggs of this insect were laid on the backs of the leaves; he described the appearance of the egg-clusters, and small native boys were employed to scrape them off the leaves and the sugar-cane crop was saved. When he arrived in India the corn crops in certain districts were being devastated by a plague of locusts. The seriousness of the situation may be judged from the fact that the crop reaped was only 25 per cent. of the normal yield, and in India, where the peasant proprietors live close to the margin of subsistence, there was imminent danger of famine. LEFROY discovered that the locusts kept flying about the same locality until the rains came and softened the ground; they then descended to the ground and laid their eggs in holes bored in the earth. Once the period of oviposition was determined, it was easy to calculate when the wingless young (*nymphs*) would hatch out, and LEFROY constructed what may be termed shrimping-nets out of light bamboo and sent the native boys with them through the growing corn, with the result that the young locusts were captured by the sackful and the next year's crop was normal. Lastly, when he was sent to Australia in the latter part of the war he had also a very serious situation to deal with. The Imperial Government had purchased large amounts of Australian wheat which was stored in Australia where it was being rapidly destroyed by weevils. LEFROY discovered that the wheat was contained in sacks which were piled on the ground covered with insufficient roofing and inadequately protected against rain and damp. The lowest bags burst and the grain exuded and thus easy access was afforded to the weevils. LEFROY found that the grain weevil was an insect which had lost the use of its wings and that it always began its attacks by entering grain lying on the ground, so he directed that the grain should be housed in sheds provided with an adequate flooring raised two or three feet above the ground and that the soil beneath them should be treated with disinfectants such as naphthalene. These measures were entirely successful in stemming the weevil plague. LEFROY always insisted on the importance of studying insects in the open under natural conditions. Quite early in his career he laid down the thesis that to attack an insect pest successfully its whole life-history must be studied; then the weak links in its chain of developmental stages would be discovered where the attack could be successfully pressed home. Whilst he recognised the importance of a knowledge of their structure, which is as indispensable a pre-requisite as the study of grammar in learning a language, he maintained that all further knowledge should be gathered in the field. "One must live with insects," he said, "in order to know them."

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VACCINIA AND VARIOLA VIRUSES.

THE ultramicroscopic viruses are notoriously difficult to study, for obstacles, in some cases seemingly insurmountable, are encountered by whatever avenue the territory of these smallest of living creatures is approached. Too small to be directly visible with the microscope, difficult to cultivate, and, even if cultivable, without distinctive reactions, we have been left only with the crude test of demonstrating their presence by inoculation of a bacteria-free filtrate into living animals. Filtration and inoculation experiments, depending as they do on such variable factors as the construction of the filter and susceptibility of the animal, have not hitherto encouraged accurate quantitative work. Perhaps some entirely new method of approach must be discovered before these ultramicroscopic viruses can be scientifically classified. In this connexion it is instructive to notice that Dr. Mervyn Gordon, in his studies on the viruses of vaccinia and variola (summarised in our last issue), has departed from the conventional technique of bacteriological examination, for we read practically nothing in his report of attempts to see these viruses with the microscope, or to stain them, or even to cultivate them in the customary fashion. He has relied entirely on experimental work on animals and is to be congratulated on having succeeded in introducing more accurate quantitative methods of analysis. He found the shaved skin of the rabbit a delicate indicator for vaccinia virus and devised methods for measuring the minimal vaccinial dose, and has made a careful study of the properties of antivaccinial serum by quantitative means. The most sensitive test for the presence of vaccinia virus is undoubtedly the cutaneous test of virulence, but the complement-fixation and agglutination tests, though their range is shorter, are not lacking in specificity, and, since they provide an independent measure, they form a welcome addition to our armamentarium. The special feature of Dr. Gordon's work is the successful employment of serological methods, which has been made possible by employing homologous (rabbit) pulp as a virus, and the proof that complement fixation and agglutination occur with vaccinia virus in much the same way as with pathogenic bacteria brings vaccinia into line with the latter group. The experiment in which an immunised serum produced a definite immunity are also of interest.

Some of the experiments which Dr. Gordon reports in the permeability of various surfaces of the rabbit to the virus of vaccinia raise the question whether the main natural method of spread of this bovine disease may not be in part by the respiratory tract rather than by fortuitous cutaneous inoculation as hitherto supposed. He found the most certain way of introducing the vaccinial virus to be by scarification of the skin, but in the absence of mechanical injury the most susceptible and permeable of the surfaces of the rabbit seems to be the nasal mucous membrane. When vaccinia virus gains access to the nasal mucosa, after an incubation period of six to eight days, a condition of acute nasal catarrh develops, accompanied by a muco-purulent nasal discharge which at the onset contains the virus of vaccinia in abundance. Animals thus infected became immune to vaccinia. Confirmatory evidence of the capacity of the nasal mucosa to absorb antigen was furnished by control observations in which the application of killed *B. coli* to the mucous membrane of the nose was followed by the appearance of specific antibodies to that micro-organism in the blood. He observes that the limits of this physiological property of the nasal mucosa and the degree to which it can be exploited for prophylactic purposes have still to be determined. The acute attack of nasal catarrh which follows after an incubation period when the vaccinial virus has gained access to the nasal mucous membrane links up the disease which we call vaccinia to the group of influenza and the common cold. It is important that we should obtain further information on the natural distribution and mode of spread of vaccinia virus in the animal kingdom. Thanks to the accurate analysis which Dr. Gordon has made we now possess a triple index—namely, the cutaneous virulence test, the agglutination, and complement-fixation tests, wherewith to identify the presence of vaccinia virus and to estimate its abundance.

A point of great practical importance demands a word of emphasis. Dr. Gordon found when studying seven different kinds of calf lymph in use in this country for purposes of vaccination that these varied very greatly in their potency. Some were active at a dilution of 1 in 100,000 and others only at a dilution of 1 in 100 or even 1 in 10. Since calf lymph is known to deteriorate on keeping it would have been interesting to know something more of the history, particularly the age, of the samples examined. No information on this point is given in the report, but as the facts are presented they seem to suggest that a very significant and inexcusable variation exists in commercial samples of calf lymph. Obviously this is a question which requires official attention. A further feature of Dr. Gordon's work which has practical implications is his research on the comparative value against vaccinia of disinfectants. The striking powers of potassium permanganate which he reveals should encourage its use in small-pox, which has hitherto been largely empirical.

Annotations.

"Ne quid nimis."

THE CATARRHAL CHILD.

The importance of catarrhal conditions in childhood in laying the foundations of future disease has received a greatly increased measure of recognition during the present year. This recognition is evidenced by the appearance of several contributions to medical literature which show not only that pædiatrists of high standing in medical practice and in the public services have given their serious attention to the subject, but that their observations have led them to differ in important respects from many of the earlier accounts of catarrhal states. A notable instance of this difference is to be found in the age which is regarded as typical for the onset of catarrh. The "catarrhal child," as hitherto depicted, is usually in the second year of life, or older, and presents features which are either typical or suggestive of rickets; by many writers the catarrhal symptoms have been regarded as essential manifestations of rickets, the causative factors being, at any rate, nutritional and environmental. The article by Dr. R. C. Clarke, which appears in our present issue, introduces some striking modifications of this conception of the ætiology and incidence of catarrh. According to his account, respiratory catarrh is extremely common in the first few weeks of life, being present in as many as 50 per cent. of the infants which he examined. He has frequently noted the presence of Harrison's sulcus in young infants, and regards it as evidence, not of rickets, but of nasal obstruction consequent upon catarrh; he bases the diagnosis of respiratory catarrh on this sign in conjunction with snuffles and bronchial râles. In early infancy nasal catarrh is almost always accompanied by bronchial catarrh, whereas in late infancy the majority escape this complication, hence the prime importance of protecting the infant from infection during the first three or four months. Dr. H. K. Waller, in a memorandum on the catarrhal child, which appeared in the recent report of Sir George Newman to the Minister of Health, gives a description of this type of case, which is in many respects in close agreement with the views expressed by Dr. Clarke. The prevalence of catarrh in the first weeks of life is emphasised, as are also the interference with efficient sucking, and hence with nutrition, the development of "tonsils and adenoids," and the increased susceptibility to febrile attacks and to infection with pyogenic organisms. Both Dr. Clarke and Dr. Waller lay stress on the necessity of protecting the infant from catarrhal organisms, and recommend as the most useful measure for this purpose the use of a mask or folded handkerchief by the mother or nurse who is attending to the child. On the more speculative problem of ætiology the agreement between the two articles is less complete. The traditional association between rickets and catarrh must necessarily be called in question by those who regard the latter as an ailment of early infancy. Dr. Clarke does not discuss this point; Dr. Waller meets it with a suggestion which inverts the hitherto established view of the causal sequence. "The rachitic child's tendency to febrile reactions has been frequently described. It is possible that the catarrhal diathesis has been overlooked as a predisposing factor in producing rickets." A further question inevitably arises if the typical age-incidence of a morbid state is found in the first weeks of life: Does heredity play a part in the ætiology: Dr. Clarke answers this decidedly in the negative: Dr. Waller gives cautious expression to the idea that a hereditary element is likely. Should both Dr. Waller's suggestions receive further elaboration, he may provide one more complication to the vexed problem of the ætiology of rickets.

THE CARE OF THE CONVALESCENT.

When a patient has "turned the corner" of a grave illness and it is safe to relax the vigilant care he has hitherto demanded, the doctor is liable to lose interest to some extent in the further progress of the case. It is a very natural reaction from the strain of his heavy responsibilities; when recovery is practically assured he can minimise the output of his mental energy and with a cheery "How are we to-day?" can chat of irrelevant matters with a vague idea of "cheering the patient up." Yet to the patient himself the period of convalescence is, perhaps, the most trying part of the illness. In the acute stage he lies passive, concentrated on the one supreme effort of battling for life, and released from all other responsibilities by the assiduous care of doctor, nurse, and friends. As life comes back gradually from this relatively simple form to the highly complex thing that modern civilisation has made it, his enfeebled powers are apt to groan under the burden they have once more to pick up and carry. The "fractiousness of convalescence" is so unimportant compared to the life-and-death issues we have to control as best we can that doctors and nurses are too prone to dismiss it with a patronising smile and forget that the patient is not fractious from love of evil or original sin, any more, indeed, than is the child; both are struggling with an adjustment to life that is slightly overtaxing their powers of adaptation. The convalescent period is well worth the thoughtful attention of the practitioner. The Public Health Committee of the New York Academy of Medicine recently appointed a sub-committee to consider the problem of convalescent care. In presenting their report[1] the Committee say that "it is remarkable that more has not been accomplished in the way of making provision for the care of convalescent patients. Homes have been established on no coördinated plan . . . . without much realisation of the various types of convalescence, and the needs of adult convalescents have received scant attention. No doubt one of the main reasons is that hitherto not enough study has been made of the subject." They begin by drawing a clear line of distinction between patients progressing towards recovery from some acute illness and those with persistent symptoms of functional disturbance but with slight or no evidence of organic disease. The first group they classify, according to the type of disease, as cardiovascular, dietetic, respiratory, and miscellaneous, and for each a different régime of convalescence should be provided. Those for whom special dietetic supervision will be required must further be subdivided according to whether they are diabetic, nephritic, or alimentary. But the medical classification, although it may be adequate enough for acute stages of illness, is only a small part of the total to be considered in catering for the convalescent. Age, sex, social status, religion, financial resources must all be allowed for, as well as that ever-present problem of the slum-worker: the convalescent mother with a toddling family that cannot be left at home alone. Last, but by no means least, is the individual temperament. One case will fret himself ill with boredom if sent to a country house five miles from the station; another will lose half the benefit of his convalescence if it is spent hectically at a popular seaside resort.

The American report deals chiefly with the convalescent home, and is of the opinion that the ideal home is a system of cottage units, arranged in single rooms, and three- or four-bed wards situated a little distance outside the urban area it serves. The patients should be selected according to the classification suggested, and should be subjected to a daily schedule of living, prescribing their hours of rising, rest, and retiring, physical exercise, recreation, social diversions, and diet. The cardiac group must have a home of two floors only in a low-lying district, while the respiratory group need more than their share of fresh air. The aim of the home should be educational as well as restorative, so that the patients learn habits of hygiene which they can carry back to their own homes. The Committee recommend the appointment of a resident medical officer to every convalescent home—a far-reaching reform if a possible one. While the ideal—if somewhat bureaucratic—conditions laid down by the Committee are not likely to be attained in this haphazard world, they will have done a real service to the profession and the community if they stimulate the average practitioner to giving more real thought and care to the planning of his wealthier patient's convalescence or the choice of home for the poorer.

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[1] Hospital Social Service, 1925, xii., 26.

CANCER-LIKE CHANGES IN TISSUE CULTURES.

In a recent paper [1] Dr. R. J. Ludford described nuclear changes occurring in the fibroblasts from the kidney of rats cultured in vitro. Fixed preparations show a partial extrusion of nucleolar matter into the cytoplasm where it is surrounded by a vacuole, and eventually disintegrates. This process is accompanied occasionally by a similar passage of a portion of the nuclear contents into the cytoplasm by a process of budding off. The extruded nuclear contents may persist for a time as a secondary nucleus and then break down. In fresh unstained cells kept in a warm chamber amœboid movements of the nucleolus could be observed, and also a movement of the nucleolus towards and away from the nuclear membrane with occasional indications of a discharge of nucleolar material into the cytoplasm. Prolonged observations in fresh cells were rendered difficult by the fact that at body temperature the nucleolus and nuclear membrane are more difficult to distinguish than when the preparation is allowed to cool to room temperature. Such nuclear extrusions occur also in normal cells in the living animal, though infrequently, but they are of common occurrence in cancer cells, where in the past they have been mistaken for cancer parasites. Dr. Ludford does not attempt to interpret these changes except as giving evidence of an interaction of nucleus and cytoplasm. But it seems reasonable to suggest that their frequent occurrence in cancer and in normal cells cultured in vitro may be associated with abnormal conditions of growth and nutrition.

Writing on the same subject,[2] Prof. A. Maximow records and figures even more pronounced changes occurring in the mammary gland cells of the rabbit cultured in vitro under special conditions. The special conditions are the addition of bone-marrow extract, instead of embryo extract. The addition of bone-marrow extract elicits not only a rapid growth especially of the cells lining the ducts, but also hypertrophy of the cells, changes in their form, formation of cell nests, and even an infiltration of the connective tissue. It is noteworthy that these changes are exhibited almost entirely by cells derived from the epithelium lining the ducts. As a result, many of these cultures present appearances which are morphologically indistinguishable from those of a carcinoma. Indeed, Maximow speaks of these appearances as "carcinomatous changes." He realises that definite proof of such a change having actually occurred in these cells can only be brought by reimplanting these cultured cells into a living animal. If these cells have really undergone a carcinomatous change they should, on reimplantation, continue to grow in vivo. But while a positive result would prove his contention, a negative would, according to Maximow, not necessarily disprove it, because even spontaneous carcinomata do not always give positive results on transplantation.

The resemblance of Prof. Maximow's tissue cultures to carcinoma is so suggestive that his contention deserves to be submitted to exhaustive experimental tests. At the same time it is well to bear in mind that this resemblance is merely morphological and may be no more than the manifestation of growth under abnormal conditions. It may, in fact, bear the same relation to cancer as the noise and clatter of a passing train has to the electricity that moves it.

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[1] Proc. Roy. Soc., B, 1925, xcviii., 457.

[2] Cancer-like Changes of the Mammary Gland in Tissue Cultures, Virchow's Archiv f. Path. Anatomie, 1925, cclvi., 813.

VITAL STATISTICS OF SCOTLAND IN 1924.

THE seventieth annual report of the Registrar-General for Scotland contains many tables of interest to the student of vital movements. But he can hardly fail to regret that this report, like other Scottish statistical reports, is not tabulated and classified on identical lines with the corresponding English reports, and that no comparative figures for the two countries and some other countries are given. The value of both the English and the Scottish reports is materially lessened thereby. The course of the Scottish birth-rate is downward, like that for other countries, but its cause has differed in detail from that of England. Until 1894 it was always over 30 per 1000, but is now only 21·9. As is well-known, the illegitimate birth-rate is high in Scotland. In 1924 it varied from 9·3 in the larger burghs per 1000 unmarried women of child-bearing ages to 13·3 in the country districts. It was as high as 24·8 in Moray, and as low as 4·7 in Shetland. This high rate is not a correct index of sexual morality, and must be corrected inter alia by reference to the marriage laws of Scotland. The average age at marriage is of interest in this connexion, having been 29·35 years for all bachelors and 26·56 for all brides. This shows a gradually increasing postponement of marriage.

From the public health point of view, the review of the Scottish vital statistics presents features of much interest. The rate of infant mortality was 97·7 per 1000 births, a low rate compared with past experience, but high, relatively, to that of England. It varied in the larger burghs from 132·9 in Paisley and 118·5 in Glasgow to 90·7 in Edinburgh and 90·6 in Perth. There is no full index to the report, but no attempt appears to be made to analyse for the whole of Scotland or for its chief towns the distribution of infant mortality in the months of the first year of life, information which is an indispensable preliminary to any attempt to ascertain at what ages infant mortality is most excessive, at what ages it is higher in some burghs than in others, and to what causes these local excesses are due. Such information as is here indicated, but expanded, is an urgent necessity for public health purposes. It is necessary that it should be done comparatively for different areas in Scotland; and the rates thus published would be invaluable as guides to medical officers of health in pressing forward accurately-directed public health work. It is satisfactory to note that for the first time in its statistical history no deaths occurred last year from typhus fever. The tuberculosis death-rate was 116 per 100,000 of population, a lower rate than in any preceding year. This is higher than that of England, and the variations in different parts of Scotland are so remarkably great as to bespeak the need for special public health investigation. Thus, in Shetland the tuberculosis death-rate was 247 (per 100,000). The population being small, this means 59 deaths; but evidently this is a case in which intensive effort at public health administration with better housing might be expected to effect rapid improvement. The next highest tuberculosis death-rates were 158 in Sutherland, 156 in Ross and Cromarty, the counties with a large population having the lowest rate being Fife (87 per 100,000) and Ayr (84 per 100,000). In Lanarkshire, which comprises nearly one-third of the population of Scotland, the rate was 132. Only a short paragraph is devoted to the important public health problem of puerperal mortality. For the whole of Scotland this reached the high figure of 5·8 per 1000 births, varying in the larger burghs from 12·2 in Coatbridge and 11·7 in Perth to 5·8 in Glasgow, 4·7 in Aberdeen, and 3·9 in Dundee.

Further tables bearing on the main problems of public health, including those indicated in the preceding paragraphs, would add greatly to the value of the Scottish statistical report, and it may not improperly be suggested that a chief value of the tabulation of registered deaths according to age and cause of death lies in the extent to which they make manifest areas of excessive mortality in one or other respect, and enable medical officers of health and sanitary authorities to direct their efforts to improve the national health where they are most needed and where their effect will be greatest.

RADIOTHERAPY AT LEEDS.

THE General Infirmary at Leeds is to be congratulated on the recent addition of a new radiotherapeutic department, the creation of which has been made possible by the generosity of two donors, Mr. J. B. Sykes, of Horbury, who has presented the building, and Miss Walker, of Chapeltown, Leeds, who has met the cost of the artificial sunlight apparatus. Through this gift Leeds now possesses one of the largest and best departments of its kind in Britain. The new building measures over 100 ft. by 45 ft., and contains 11 treatment rooms as well as instrument rooms, waiting rooms, staff rooms, dressing rooms, and workshop. The building is very airy and well lighted, and a broad corridor down the centre provides access to the various rooms. Five of the treatment rooms are devoted to deep X ray therapy, and each cubicle is equipped with apparatus capable of generating 200,000 volts and upwards. Provision is made for the housing of the apparatus in a large instrument room at the back of the cubicles. Special care has been taken to provide for the adequate protection of the staff by heavy lead linings in all the cubicles, and the controls are placed in a special room outside within easy reach of the operator. The cubicles are lofty and are lighted from above, while central heating has been adopted throughout the building. The "artificial sunlight" department consists of six treatment rooms; the two largest, measuring 20 ft. square, are for men and women respectively. Dressing rooms are attached to each, and an observation room is provided so as to control both treatment rooms. Each room is equipped with two "Mountain Sun" mercury-vapour lamps, and two arc lamps together with special radiant heat lamps. A separate room for the treatment of cases unable to sit or stand is equipped with lamps which can be used while the patient reclines on a couch. Another room is reserved for children, and similar equipment of arc and mercury-vapour lamps has been provided here. A special room for treatment by the Kromayer lamps is placed at the end of the long corridor, and one of the largest rooms has been set apart for Finsen light treatment of lupus and similar diseases. At present upwards of 100 cases a day have been receiving "artificial sunlight" treatment, but the new department will extend the scope of daily treatment to over three times that number. With this equipment we may confidently expect that Leeds will achieve results not only of immediate benefit to local patients, but of value to the progress of this branch of medical science.

PIONEERS IN TROPICAL MEDICINE.

WE are apt to regard tropical medicine as a child of recent infancy, but several years before the battle of Waterloo it was a well-grown stripling, although it did not come into its full inheritance until the present century. Pioneers in Tropical Medicine was the subject of Dr. Andrew Balfour's presidential address to the Royal Society of Tropical Medicine and Hygiene held at 11, Chandos-street, London, on Oct. 15th, when, with the aid of beautifully prepared portraits on the epidiascope, he gave cameo biographies of the men who throughout the nineteenth century—and before—had toiled to raise the symbol of Æsculapius along with the British flag in all corners of the world. The list of British pioneers, and in this field Scotsmen are well to the fore, is a long one; in the course of an interesting hour Dr. Balfour could do no more than briefly touch on the more outstanding figures of that company. The stimulus to the study of tropical diseases was first felt in the fighting services in their campaigns overseas in the warring years of the late eighteenth century, and it was Sir John Pringle (1707–83), "a pursy and peppery gentleman," who founded military hygiene, groping his way in the dark without the aid of such useful things as statistics or precedents. He published a book in 1775 on Observations on Diseases in the Army, and was subsequently elected President of the Royal Society. From his works we know how common in those days was helminthiasis, and he specifically recommends bleeding in the crises of malaria, "which," Dr. Balfour said, "was not at all a bad idea"; but he is best remembered as a hygienist who made a careful study of the rationing and the diet of the soldiers. His parallel in the senior Service was James Lind (1767–94), perhaps a greater man even than Pringle. He served in the tropics and there gained a first-hand knowledge of local diseases. He was a man singularly modern in his ideas, an earnest worker, and a clear thinker. With him two other names are associated, Sir Gilbert Blane, who introduced lemon juice into the Navy as an antiscorbutic, and Surgeon (Thomas) Trotter. They were a wonderful trio, thrown together in the wars against France. Pringle was followed by Donald Monro (1729–1802), who wrote an amazingly modern essay on the preservation of the soldier's health in camps. Among many names worthy of record are those of Benjamin Rush, who first described dengue, and by his energetic efforts did much to quell the outbreak of yellow fever in Philadelphia in 1793, and Annesley, of Dublin, who recorded the experience of 30 years' service in the tropics. In the middle of the nineteenth century George Biddy showed that the spread of cholera was due to human intercourse; Edmund Parkes (1819–76) suggested the possibility of healthy carriers, and John Snow went a step further and reasoned out that the poison of cholera was contained in human excrement. Biddy also introduced humane treatment of the insane in India, and in 1886 he instigated the systematic inspection of Indian school-children. Among the Americans after Rush who have done pioneer work in tropical medicine comes Josiah Clark Nott, while Walter Reed and Surgeon-General Sir William Crawford Gorgas are familiar names. Women, too, have played their part in this great work, although not perhaps in a strictly medical or scientific field, and Dr. Balfour gave a brief history of the lives of Florence Nightingale, Mary Kingsley, of West Africa, and Mary Slessor, of Calabar. The spirit and achievements of Dr. David Livingstone was the vanguard of medical advance in the dark continent. Dr. Balfour drew shrewd conclusions from the portraits he showed on the screen as to the characters of the subjects, which made his lecture one of living and personal interest.

PEPYS AND SCIENCE.

THE Master of Christ's College, Cambridge, himself a writer of picturesque accuracy, is the very man to write with understanding and sympathy about that delightful seventeenth century Horace Walpole whom we know as Samuel Pepys, secretary to the Admiralty. In the current *Quarterly Review* Sir Arthur Shipley points out how science in Pepys's time was the "object of an insatiable curiosity, perhaps in a way childish," and how Pepys himself was insatiably curious. Nothing was too odd or too trivial for his notice and record. On March 14th, 1662, he met a German, Dr. Kuffler, who came "to discourse with us about his engine to blow up ships," a subject naturally interesting to a high official of the Admiralty. Although he only began to learn the first four rules of arithmetic in his thirtieth year, he was yet a great friend of Edward Cocker, who engraved a slide rule for him. On account of his defective vision he took much interest in optics and records how in company with Mr. Spong and "my twelve foot glass"—i.e., one with a focal length of 12 feet—"we did see Jupiter" and had "several fine discourses upon the globes this afternoon, particularly why the fixed stars do not rise and set at the same hour all the year long, which he could not demonstrate, nor I either." Let us hope that comprehension is wider nowadays. Pepys was elected to the Royal Society in 1665 and in 1684 became its President. It was during his term of office that Newton's immortal work, the "Principia," was accepted and published by the Society under Pepys's imprimatur. Many passages in the diary are quoted by Sir Arthur Shipley, which show how constantly Pepys attended meetings and demonstrations, several of which dealt with transfusion of blood. He also at "my Lord Crewe's" and other places met various learned persons who told him extraordinary stories about swallows hibernating, a belief which even Gilbert White held, and one of these, Mr. Templer—"an ingenious man and a person of honour he seems to be," says Pepys with unwonted caution—told a story of how serpents in Lancashire catch larks by crawling under a soaring lark and with wide open mouth eject their poison, whereupon the lark falls down into their jaws. Many similar startling episodes in natural history will be found in the pages of the Revd. Edward Topsell, who wrote a "History of Beasts and Serpents," to which Dr. Muffett contributed a section upon insects. Pepys relates a story from Muffett about Dr. Caius, and it is not unreasonable to suppose that he was acquainted with Topsell's book, the matter of which would certainly have interested him. So many facets did Pepys present to the world that, as Sir Arthur Shipley puts it, "he appears to have been almost globular."

RADIOGRAPHIC DIAGNOSIS OF SPINAL DISEASE.

IT seems that French radiologists of eminence have found difficulty in distinguishing between a malignant metastasis and a tuberculous condition such as Pott's disease. French descriptions of the differential diagnosis are brief and inadequate, one recent publication dismissing the matter with the statement: "The invaded bodies show abnormal transparency. The spongy tissue progressively disappears; the vertebral body crumbles; as a result there are deformities analogous to those of Pott's disease." A well-illustrated monograph[1] by Prof. J. A. Sicard and MM. J. Belot, Coste, and Gastaud makes good this defect. These investigators divide metastatic cancer into three main types—osteoporotic, osteoplastic, and para-cancerous changes. Under the first heading they discuss the differential diagnosis of Pott's disease and neoplastic metastases, pointing out that the latter are primarily and always osseous, and never cause any alteration in the intervertebral discs, even in an advanced stage. Generally the destruction results in a thinning of the vertebra until it becomes less than a fifth of its normal height. The disintegration of the vertebra is always more visible on the side than on the front, and is often the only radiological evidence. The compression of the body seems to compensate, from the point of view of transparence, for the structural alteration. Screening the spine may be the only means of diagnosing new growth of the prostate, so often symptomless at the primary focus. It is characterised particularly by an osteoplastic metatasis first described by Recklinghausen in 1891. At post mortem a great many of the bones are found thickened, eburnated, and abnormally hard. The remarkable diffuseness of the lesions is the most striking feature; starting from the primary focus in the prostate the process attacks first and most extensively the lumbar region and pelvis, but extends even up to the ribs and humeral heads. Naturally, the resulting anæmia is marked, and Assman diagnosed a prostatic growth on this anæmia combined with bilateral sciatica alone. A less exuberant osteoplastic form of metastasis is met with in mammary and pyloric cancers. The thyroid metastases, on the other hand, are exclusively of the decalcifying, destructive, "osteoclastic" type. The osteoplastic reaction may also take the form of "opaque vertebra," a condition reported by MM. Souques, Lafourcade, and Terris from a case of mammary scirrhus at the Salpêtrière. These opaque vertebræ are seen in cases where syphilis is present and may be the cause, but the authors prove conclusively from post-mortem cases that cancerous "opaque vertebræ" exist. Under the heading of "paracancerous lesions," the authors discuss whether a cancer can destroy bone from a distance without the actual presence of its cells, thus preparing the way for a metastasis. At present they do not feel justified in postulating more than paracancerous bony dystrophy. In a case of prostato-pelvic cancer under their care a radiological examination revealed a medullary-osseous fibrosis with hypercalcification throughout the whole skeleton, exactly similar to that associated with epitheliomatous infiltration in the lumbar region. H. Roger [2] has recorded a case of cancer of the breast showing a similar change in parts remote from any direct infiltration or metastasis. Primary tumours of the vertebral column are not common. Sarcoma tends to start on the outside and grow into a large tumour of the back without compression of the cord. Secondary neoplasms, according to Fraenkel, never give this large enveloping shadow, but the distinction is not quite so absolute as he implied. The radiological diagnosis of vertebral rheumatism, infectious arthritis, osteomalacia, traumata, and malformations are also discussed.

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[1] Aspects Radiographiques du Cancer Vertébral, Jour. de Radiol. et d'Electrol., August, 1925.

GERMAN MEDICAL CONGRESS.

THE Deutscher Aerzte-Vereinsbund held its annual meeting this year in Leipzig in association with the Leipziger Verband, the great medical union which is now called Hartmann-Bund in honour of its late founder; 267 delegates were present, representing medical societies and local branches with a total membership of 33,581. After the usual addresses of welcome the meeting discussed the suggested codification of medical etiquette. The proposal contained rules on professional secrecy, on advertising, and on the question of the qualification of specialists. The sale and the purchase of a medical practice is held to be unprofessional except in cases where the widow or the children of a deceased medical man offer his practice for sale. It is further unprofessional to criticise other medical men, to give medical advice, or to practise during a holiday stay in a health resort where other medical men are settled, and to give testimonials for "secret" medicines. The establishment of a joint practice is allowed only between specialists of the same branch or between general practitioners, but not between a specialist and a general practitioner. Canvassing is strictly forbidden and contracts allowed only under the rules of the Hartmann-Bund. Owing to the difficulties of the matter the codification was entrusted to a special committee for consideration. Another subject of discussion was the rôle of medical men with regard to the extensive physical culture activities which are now very popular among the younger generation of the German people. Special courses of instruction in the examination of amateur athletes have been instituted in several cities and universities. It was resolved that the medical advisers of sports societies must examine the members only as to their ability for the particular sport practised, but must strictly refrain from attending members in a general way. The forthcoming reform of the German criminal code, although it has not yet been brought before Parliament, was then discussed from a medical point of view. The principal items of medical interest are that a criminal shall be held responsible for his actions even when in a state of diminished consciousness caused by drunkenness, drunkenness being no longer regarded as an extenuating circumstance. Drunkards shall be subjected to special measures, such as compulsory detention in an asylum, prohibition to obtain intoxicating liquor, loss of civil and voting rights. Other items of interest deal with homosexuality which shall continue to be a criminal offence for men but not for women. Professional secrecy shall not be binding when it conflicts with the public interest as, for instance, in the case of infectious and venereal diseases. On the question of criminal abortion, which had already been discussed in the Bavarian branch of the Association (see THE LANCET, Sept. 19th, p. 620), this meeting came to the same conclusion as that branch. A communist delegate pleaded for absolute liberty in the matter of abortion as existed in Russia, because, he said, abortion should be regarded not from an ethical but from an economic standpoint. Finally the Congress discussed the question of quackery and unqualified practice and voted for its absolute suppression and for an alteration of the law to that end. Jointly with the Aerzte-Vereinsbund, the Hartmann-Bund discussed questions connected with club practice, the extension of the club system to the middle classes, and the systematic distribution of medical men throughout the country.

ATHLETICS AND ECONOMY.

THE review which we publish of Mr. Gilbert Bourne's book on oarsmanship recalls to mind part of Prof. A. V. Hill's address to the British Association on the Physiological Basis of Athletic Records.[1] Wasteful effort in muscular movements may be usefully demonstrated by the slow-motion cinematograph, and the economical use of energy is of no less interest when studied physiologically. According to the observations of A. V. Hill and H. Lupton the maximum efficiency of human muscular movement is obtained at speeds of about one maximal movement per second. In rowing, experience agrees that such a speed is about the optimum; in an eight-oar boat the recovery takes almost as long as the stroke, and 32 strokes per minute is generally regarded as the most efficient rate. By a muscular mechanism depending on the formation of lactic acid the body can get into debt for oxygen, and the amount to which this is possible varies with the individual; but when the account has been overdrawn to the extent of more than about 15 litres of oxygen (1 litre of oxygen consumed liberates enough energy to raise one ton about seven feet), the average athletic man becomes incapable of further effort. Thus, although it is permissible in a very short rowing race to work less efficiently by adopting a faster stroke, the work done will not be proportionately greater, and exhaustion will soon set in. When the body is working against an external resistance as in rowing there is an optimum speed, and if the effort is to be long continued it must be made at a speed not far from this optimum. In running, however, the work is absorbed by the viscous-elastic properties of the muscles or internal friction, and there is no optimum speed; the expense of the movement increases continually as the speed goes up. According to Prof. Hill a speed of 280 steps per minute requires 24 litres of oxygen per minute, whilst a speed of 240 steps per minute requires only 8 litres. Great effort is obviously not economical. It is said that to run a railway train at 50 miles an hour needs twice as much coal as to run it at 40, and accordingly the railway companies are prejudiced in favour of the latter speed. In the same way the average citizen in sedentary employment rightly refuses to develop his muscles and his powers to the pitch advocated and demonstrated by the late Mr. Eugen Sandow. Training may increase the ability to get into debt for oxygen and it certainly makes for accurate muscular movement, but whilst none can deny the value of exercise it is unnecessary to develop great athletic power in those whose station in life does not give a high value to strength or rapid movement. "The little more, and how much it is" is of great value in creating records, but the immediate or ultimate price is often unduly high. Writing in The Lancet (1914, i., 950), Sir Thomas Oliver mentioned the premature ageing of professional footballers, drew attention to the dangers of sudden overstrain, and continued: "One of the consequences of hard rowing, running, and football playing is an increase in the size of the heart, especially of the left ventricle. While enlargement of the heart may be good enough for the youth of 22 who takes exercise freely, it is not the best for a sedentary clerk of 30. The man of 30 would find himself with more heart than he requires; his circulation would be rather embarrassed than lightened; for it is difficult to tone down the heart to the diminished needs of the economy." The lesson seems to be that excess should as far as possible be left to those who make their living by it, and it is a lesson not without application.

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[2] Marseille Médical, Feb. 15th, 1925.

[1] The Advancement of Science. 1925. Published by the British Association for the Advancement of Science, Burlington House, London, W. 6s.

THE MEDICAL OFFICERSHIP OF LONDON COUNTY.

Dr. F. N. Kay Menzies is to succeed Sir William Hamer in January next as chief medical officer for the County of London. The decision was taken by the Council on Tuesday of this week. Dr. Menzies joined the medical department of the Council in 1909, and for the last ten years has identified himself with the organisation of work in connexion with tuberculosis, venereal disease, and child welfare. Eighteen months ago, with the approval of the Council, he succeeded the late Sir Napier Burnett as Director of the Hospital and Medical Services Department at the Red Cross, and two reports have already issued from his pen, showing how the voluntary hospitals of Great Britain outside London may be used to greater advantage and economy. Dr. Menzies was struck with the deficient provision for the treatment of such disorders as ophthalmia neonatorum and infantile paralysis, and he urged hospital boards to acquaint themselves with the particular needs of the area which they serve and especially to consult the general practitioner as to how they may best assist him in the diagnosis and treatment of his patients. It would, he thought, be very unfair for the Hospitals Commission to find a voluntary hospital to be failing in its duty, until it had been definitely established whether the public authorities in that area were doing their duty to those for whom they were legally responsible. He outlined a scheme for a comprehensive survey of existing facilities for the treatment of the sick, with a central bureau of hospital information. This experience and this broad outlook will now be directed towards the solution of hospital problems in London. The time is not long distant when the admirable buildings and equipment of the Poor-law institutions must be fitted into a concerted scheme for the care and treatment of the sick in the metropolis. Anyone who takes a bird's-eye view of London might be surprised to see the extent and the enviable sites of these institutions. Should they come under the jurisdiction of the Council, Dr. Menzies will have an opportunity with which we have every confidence he is competent to deal.

We have already given expression to the sincere regret felt by the very large number of medical men, hygienists, and officials, who have come into relations with Sir William Hamer, at his impending retirement. The blow will be mitigated by the Council's decision to retain his services for a further two years in a consultative capacity. Sir William Hamer entered the service of the Council in 1892 and has thus served the Council continuously for nearly 34 years. One of the most important developments with which Sir William Hamer has been associated has been the growth and organisation of the school medical service. When he took up his appointment in January, 1912, the scheme of medical inspection and treatment was in its infancy. Under his control it has become a far-reaching undertaking, under which every year 300,000 children are medically inspected, the same number are seen by school dentists, over 1,000,000 examinations are made by the school nurses in connexion with the personal hygiene scheme, 230,000 children make 1,500,000 attendances at hospitals and treatment centres, and over 100,000 attendances are made at cleansing stations. The activities of the school medical service during this period have resulted in striking improvements in the health and physique of the children in the schools. On the epidemiological side of his work, the General Purposes Committee of the Council has put on record: "Sir William's researches into the incidence of infectious diseases have made him one of the most distinguished of authorities upon epidemiology. In particular his work upon typhoid fever and upon influenza and its associated group of diseases has furnished a series of brilliant reports to the Council, and has contributed materially both to establish clearer conceptions of the nature of these diseases, and to open up new lines of preventive measures." This is no more than Sir William Hamer's due, for it is rare indeed to find a sanitary officer loaded with administrative duties who yet keeps a mind ever fresh in the pursuit of epidemiological problems. Some of these problems are appreciably nearer solution for his life-work.

At the Royal Society of Medicine the first Social Evening of the session will be held on Tuesday next, Oct. 27th, at 8.30 p.m., when the President, Sir StClair Thomson, will give a short address on Shakespeare as a Guide in the Art and Practice of Medicine.

At the Royal College of Physicians of London on Oct. 19th, after delivery of the Harveian Oration by Sir Frederick Mott, the Baly Medal was presented by the President to Prof. R. Magnus, of Utrecht. The Harveian Dinner was held in the evening, Sir Humphry Rolleston presiding. In regard to future arrangements the Bradshaw lecture, by Dr. Edwin Bramwell, on the Myopathies (Nov. 5th), and the FitzPatrick lectures, by Dr. Arthur Shadwell, on Medicine in Ancient Egypt, Assyria, and Palestine (Nov. 10th and 12th), will be delivered at the College, at 5 p.m., on the respective dates. The Lloyd Roberts lecture, by Sir Arthur Keith, on Man's Structural Defects, will be given on Nov. 16th, at the Royal Society of Medicine, 1, Wimpole-street, W., at 5.30 p.m.

Coöperation in Hospital Management.—On the purely business side of hospital management, coöperation is essential from two points of view, as was clearly pointed out by Sir Arthur Stanley in his presidential address to the Incorporated Association of Hospital Officers on Oct. 16th. These two points of view concern the hospital staffs and the subscribing public respectively. The time had come, Sir Arthur Stanley said, when hospitals must be considered to be business concerns, certainly to the extent of their administration and management, and as such they must be conducted upon the lines found to be most efficient in the business world. During the past year the Association had been invited by the King Edward's Hospital Fund to consider and report upon the proposed draft revision of the Revised Uniform System of Hospital Accounts, a revision which all were agreed was essential. Further, he stated that the Council of the Association had been most energetic in their efforts to secure the introduction of a pensions scheme for hospital officers. A concrete scheme was prepared in conjunction with one for nurses by the College of Nursing; with its adoption in London it would spread to the provinces, and they looked forward to the time when there would be one pensions scheme in operation for the staffs of all voluntary hospitals. Thus coördination in hospital management will greatly enhance the harmonious and effective functioning of the hospital system as a whole. Of hardly less importance is the effect of good business management on the subscribing public. The public wants business methods, said the President, because it wants to feel that its money is being efficiently used. A good balance-sheet is perhaps the strongest appeal that a hospital can issue.

Modern Technique in Treatment.

A Series of Special Articles, contributed by invitation, on the Treatment of Medical and Surgical Conditions.

CLXIV.

TREATMENT OF HYDROCELE, HÆMATOCELE, VARICOCELE, AND SPERMATOCELE.*

III. *Varicocele.*

The ætiology of the varicose condition of the veins of the pampiniform plexus which is known as varicocele is often obscure, though its more frequent presence on the left side of the body suggests that the right-angled opening of the left spermatic vein into the renal renders its radicles more liable to obstruction than the sloping opening of the right spermatic into the inferior vena cava, and the condition is undoubtedly aggravated in constipated individuals by the drag of the loaded sigmoid colon and rectum, compressing and distorting the left spermatic vein as it crosses the pelvic brim just behind the pelvi-rectal junction. Varicocele may occur secondarily to neoplasms of the left kidney obstructing the venous return into the left renal vein, or to carcinoma of the pelvi-rectal region causing similar congestion, while more rarely retroperitoneal teratomata or sarcomata may cause varicosity of one or both pampiniform plexuses. In every case, therefore, especially where the history of onset of the varicocele is sudden, the urine should be examined for blood and the abdomen carefully palpated. Should one of these primary causes be discovered it obviously calls for urgent treatment by removal, if possible, when the secondary scrotal condition will certainly improve.

In the majority of cases, however, unilateral varicocele, usually left-sided, exists with no obvious cause, even constipation being absent; and in these cases it cannot be too strongly urged that no treatment is called for unless the condition is causing pain and discomfort to the patient. Unless his attention is directed to it, and his mind disturbed by unfounded tales of danger of impotence if the condition be left untreated, he is rarely troubled by its presence. In some few cases, especially in hot countries and in patients taking riding exercise, if the scrotum be pendulous, pain and a congested feeling result from exertion, and it is then, as also in candidates for the services, where a varicocele may be used as a cause of malingering, justifiable to interfere.

In elderly patients all that is usually necessary is a well-fitted net-suspender to support the scrotum against the perineum; this need be worn only during the day, and is a source of comfort to the patient. Suspenders are not to be recommended in the case of neurotic young men, as their presence tends to concentrate the patient's attention on the genitalia. In those cases where a suspender is ill tolerated, or where the patient is a candidate for one of the services, operation may be undertaken and the main mass of the pampiniform plexus ligated.

Operation.

The pubes having been shaved and purified, the patient is anæsthetised, and a short incision made upwards and outwards from the pubic spine on the affected side so as to expose the spermatic cord as it passes out of the external abdominal ring and down into the scrotum; there is no need to open the inguinal canal by incising the external oblique aponeurosis. The cord is elevated on a retractor, and the fascial sheath around it opened longitudinally, the cremaster muscle-fibres separated, and the vessels exposed. The vas deferens, lying behind the main mass of the pampiniform plexus, should be isolated together with the deferential artery and veins which closely accompany it. The veins are now held up on the retractor and search made for the spermatic artery, with which are usually associated one or two smallish veins; when found this also should be isolated together with the accompanying veins, but no very prolonged search should be made for the vessel, as although its ligation is not desirable, actual atrophy of the testis rarely follows. The remaining veins of the plexus are now dissected clear of the vas and artery for about two or three inches, ligated at the upper and lower limits of the cleared space, and the intervening mass removed, care being taken not to cut them within a quarter of an inch of the ligature for fear of this slipping off. A stitch is now passed through the parts of the veins distal to the ligatures, and these are approximated, a proceeding which holds up the testicle and saves the patient much discomfort and the need of a post-operative scrotal support. I do not consider it necessary to evaginate the testis through a slit in the tunica vaginalis, as the occurrence of a hydrocele of the tunica vaginalis, consequent on the cutting off of the venous return, is so rare if the operation is carried out as described above. The patient should be kept in bed for five or six days, after which he may be allowed up wearing a well-fitting net-suspender, which must, of course, be fitted after the operation. The use of this suspender is a great comfort to the patient for the first fortnight after operation, when its use should be discontinued, except in cases where the patient is indulging in occupations, such as riding or bicycling, where friction occurs to the scrotum and perineum, when the suspender should be worn for at least a month after operation, on all occasions when such exercise is indulged in.

IV. *Spermatocele.*

A further condition of interest in connexion with abnormalities of the scrotal contents is that of spermatocele, a condition usually met with in elderly men and frequently bilateral, the patient's attention being drawn to the presence of an abnormality by a sensation of fullness and discomfort in the testes. The condition arises from the blocking of the ducts of the epididymis, with subsequent distension of the tubules behind, so that one or more rounded cystic swellings occur in the course of the epididymis, usually around the upper and back part of the testes, and may be found to vary in size from a pea to a chestnut; occasionally such a swelling may arise from distension of the vestigial hydatids of Morgagni at the upper end of the testes, in which case they may be seen in younger subjects.

Treatment consists in excision of the thin-walled cysts from the surrounding epididymis, an easy task if no inflammatory reaction is present, the testis being exposed through an inguinal incision as for hydrocele. The tunica vaginalis usually needs incision to expose the cysts, and it is wise to leave it evaginated as described in order to obviate the risk of a hydrocele consequent on the handling at operation. The condition of spermatocele is not in itself dangerous, but removal of the tense cyst causes both physical and mental relief to the elderly patient, and is therefore advisable, although recurrence, usually from formation of new cysts, is by no means uncommon. Operation on both sides is liable to be followed by sterility, though it is somewhat comparable to Steinach's operation in that it is often followed by a temporary improvement in both general and sexual power.

Philip H. Mitchiner, M.D., M.S. Lond.,
F.R.C.S. Eng.,
Surgeon to Out-patients, St. Thomas's Hospital;
Surgeon, Royal Northern Hospital, London.

Naval Medical Compassionate Fund.—At the quarterly meeting of the directors of the Fund held on Oct. 6th, Surgeon Vice-Admiral Joseph Chambers, C.B., C.M.G., Medical Director-General of the Navy, in the chair, the sum of £124 was distributed among the several applicants.

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* Parts I. and II. appeared in The Lancet last week.

Special Articles.

SCOTLAND.

(From our own Correspondent.)

James Mackenzie Institute for Clinical Research, St. Andrews.

At a meeting of the Institute on Oct. 13th Dr. Douglas Guthrie (Edinburgh) introduced the subject of prognosis in middle-ear suppuration. Though this is known to be a common condition he believed that it was often overlooked. Pus did not flow from the ear in all cases and might be small in quantity so that the disease was frequently undiagnosed. That common type of deafness, otosclerosis, was held by some authorities to be the result of previous inflammation in the middle ear which might have escaped notice. He was convinced that a proportion of deaths attributed to "meningitis" owed their origin to middle-ear disease. In many cases persistent otorrhœa resulted in chronic ill-health, while secondary pulmonary and digestive diseases were common. He alluded to the unsatisfactory terminology in use in regard to otitis media, commenting on the vagueness of meaning of such terms as "acute" and "chronic" and "catarrhal" otitis media, all of which merely represented degrees of the same process. He directed attention to several anatomical features which affected the nature and progress of the condition—e.g., the occurrence of bony pockets in the middle ear, the short, wide, straight Eustachian tube of infants, and so forth. In this connexion he emphasised the danger of common cold in the infant. He referred to cases of unexplained pyrexia in children in which, in spite of a normal appearance of the drum, pus was proved to be present on paracentesis (so-called latent otitis media). The bulk of Dr. Guthrie's paper dealt with the results of an investigation of the subsequent history of 345 cases of otorrhœa over a period of years, which was undertaken on the instigation of the late Sir James Mackenzie. This had proved most illuminating. The ultimate results of various operative procedures as regards life and deafness were illustrated, and as a result of comparison of these it became clear that the more radical forms of surgical procedure should be discarded in favour of more conservative methods. From his figures it was also evident that deafness was more commonly the result of previous middle-ear inflammation than was supposed.

Anderson College of Medicine, Glasgow.

The formal opening of the winter session took place on Tuesday, Oct. 13th, when Mr. Alexander Miles, secretary to the Royal College of Surgeons, Edinburgh, gave an address on Coördination in the Study of Medicine. Mr. Miles pointed out that the purpose of the medical curriculum, as drawn up by the licensing authorities and approved by the General Medical Council, was to qualify men and women for the practice of the profession of medicine as family doctors. In the earlier scientific subjects the student learned something of the great biological, chemical, and physical laws, and by his own observations and experiments was able to verify at least some of them. This paved the way for exact study of the human body, by means of anatomy, physiology, and pathology, with pharmacology as the equipment for treatment of morbid conditions. Hospital work followed with medicine, surgery, and midwifery, and here the student first dealt with the human subject as a sick person. Public health and medical jurisprudence taught him his relations and duties to the community as a whole. On the motion of Prof. Carstairs Douglas, Dean of the College, a vote of thanks was accorded Mr. Miles, who was afterwards entertained to lunch by the governors and staff in the Central Station Hotel.

Edinburgh: Prof. John Fraser's Inaugural Lecture.

Prof. John Fraser, who was appointed Regius professor of clinical surgery at the University of Edinburgh in March of this year on the retirement of Sir Harold Stiles, recently delivered his inaugural lecture in the anatomy lecture theatre of the University. Principal Sir Alfred Ewing presided. Under the title of "De Novo," Prof. Fraser spoke on the course he would wish his education to follow were he given a fresh start, or in other words, on his educational ideals. He said that he had regretfully to confess that with every year the profession of medicine became more of a science and less of an art, and that to keep abreast of the times in medical teaching grew increasingly difficult. In this age of specialisation the medical curriculum made such demands upon the student that there must be specialisation in the preparation for it. The education of the average student when he entered a university was deficient in one vital aspect—he had never been taught the logical processes upon which the acquisition of knowledge was based. The science of induction, observation, elimination of the irrelevant and inference were a closed book to him, or, if he used them, it was as a blind and purposeless instrument which bore no fruit because it was never enriched by the stimulus of purpose. From bitter experience he would say that that was a matter of the most extreme importance. Between man and man there was little material difference where the mental machinery was concerned; it was the manner by which it was worked and the method on which it was treated that spelt the difference between success and failure. He would suggest that the most productive course for the later school years would be a liberal general education, a sufficient knowledge of Latin and Greek to enable the student to understand the etymology of his profession, as perfect a knowledge as it was possible for him to acquire of French and German, and progressively intensified instruction in the basic or natural sciences—physics, chemistry, and biology. On leaving school he considered it a great advantage for a student to take an arts course before embarking on the study of medicine, because, in the words of Sir George Newman, it was "essential to his proper professional education that it should be deeply infused and inspired by the broadest and most liberal culture, from which he may derive mental discipline, the scientific habit, and an intellectual mastery of the principles involved in his profession." Were he again a medical undergraduate, Prof. Fraser said, he would desire to be taught analytically, he would welcome the extended use of the revision and tutorial class, and he would like to see note-taking at lectures abolished, its place being taken by printed synopsis slips distributed the day before. If medicine was once the foster-mother of science, Prof. Fraser concluded, science was now the mother of medicine, and a medical career, preparatory, undergraduate, and postgraduate, must therefore be planned scientifically.

IRELAND.

(From our own Correspondent.)

The Health of Belfast.

The annual report for 1924 of the medical officer of health for Belfast is, on the whole, satisfactory reading. The birth-rate was 23·9, a decrease of 1·1 as compared with the preceding year, when the rate was 25·0. The death-rate was 14·3 per 1000, an increase of 0·5 compared with the year 1923, but 2·8 below the average rate for the ten preceding years. Of the total deaths registered, 1948, or 30·78 per cent., were caused by chest diseases, 605 being due to phthisis, 623 to pneumonia, and 720 to other diseases of the respiratory system; 107 deaths of children under 1 year old per 1000 births were registered during the year. This is an increase of 6 per 1000 compared with the preceding year. Epidemics of scarlet fever and of encephalitis lethargica occurred during the year; 1818 cases of the former were registered with 57 deaths, a case-mortality of 0·44 per cent.; 221 cases of the latter were registered with 30 deaths, a case-mortality of 14·2 per cent. The epidemic of encephalitis lethargica was almost confined to the months of May, June, and July. No case of typhus fever was registered during the year; 44 cases of typhoid fever were registered with 3 deaths. The number of deaths registered during the preceding year was 4, and the average number registered annually during the ten years 1914–23 was 20. The disease, formerly very prevalent in Belfast, is rapidly dying out, due mainly to the city's excellent water-supply. The various health services have been well maintained. Maternity and child welfare work has been steadily developed. There were six centres in operation during the year. The number of babies medically examined was 2239, and the total number of attendances at the centres was 29,903. This work is progressing in a satisfactory manner, and its utility is becoming more and more recognised. Infant mortality remains too high, though there has been a marked decline in the last 20 years. The figure in 1904 was 154, and in 1905 it was 136, compared with 101 in 1923 and 107 in 1924. It is worthy of note that the birth-rate has fallen from 33·4 per 1000 in 1881 to 23·9 per 1000 in 1924.

Royal Victoria Hospital, Belfast.

The opening address of the present session was delivered in the King Edward Hall of the hospital on Oct. 15th by Prof. C. G. Lowry, who recalled the history of the hospital, its large developments in recent years, and the rapid growth of the Belfast Medical School. He emphasised the great importance of clinical studies, and expressed the opinion that the three years allotted to these studies were insufficient. The medical student should remember the motto of Sir Spencer Wells, "Do to-day's work to-day," and the words of Sir William Osler, "Do the day's work well, and take no thought for to-morrow." Carlyle had admonished them "not to see what lies dimly at a distance, but to do what lies clearly at hand." The lecturer stressed the importance for the student of taking careful clinical notes, which should be brief. It had been well said that "to study the phenomena of disease without books is to sail an uncharted sea, while to study books without patients is not to go to sea at all." The lecturer urged the importance to the student of the study of medical biography. It was not fitting that the medical student should know the name of Donoghue's Derby mounts but know nothing of Dupuytren or Dover, or be more familiar with the names of Lenglen and Lacoste than those of Lister and Laennec. The memoirs of Sir James Paget and of Pasteur were to be specially commended. They formed a medical and scientific history of the greatest period of progress in the history of mankind—the Victorian era. Those who were beginning their clinical studies at the present time were fortunate. Their art was at a most interesting period of its development. During the past quarter of a century there had been great advances in the knowledge of bacterial infection, venereal diseases, disorders of metabolism, X ray diagnosis, the art of anæsthesia, and the technique of surgery and obstetrics. Some of them might see the conquest of malignant disease, the elucidation of cardiovascular degenerations, and a reduction in maternal mortality in childbirth. Where the vanguard camped to-day, the rearguard would rest to-morrow. Let them always remember that courage, discipline, and perseverance were the keys to success in life.

A memorial tablet to the late Dr. J. W. Mullen has been placed in the Ladywell Sanatorium, Eccles New-road, Salford. Dr. Mullen was medical superintendent of the institution for 42 years.

PARIS.

(FROM OUR OWN CORRESPONDENT.)

The Safety of Railway Travellers.

THE Academy of Medicine recently received a communication from the managing committee of the French railways asking whether the Academy had ever passed a recommendation dealing with the protection of travellers against accidents, in so far as such protection lay within the province of medicine. It appears that the Academy issued only one such recommendation in 1922, and that dealt merely with urban traffic, particularly motor omnibuses. During the last few years the number of trains, especially of express trains, has increased, and the heavy demands on the working staff calls for employees of the best type, with first-class eyes and ears, and who are decisive and quick in judgment. Alcoholism is now on the increase, and although the incidence of syphilis has apparently diminished since 1918, there is at the present time a likelihood of some increase of general paralysis of the insane, for syphilis, although promptly and efficaciously treated, was rife during the war. It is of prime importance that responsible employees such as guards, signalmen, and pointsmen, should be selected with care, and be examined exhaustively as regards their mental and physical equipment. The Academy has therefore nominated a commission, on the proposal of Dr. Maurice de Fleury, consisting of a medico-legal expert, two surgeons, a cardiologist, a neurologist, a psychiatrist, an oto-rhino-laryngologist, and an ophthalmologist. The value of the ophthalmologist is very great, for apart from testing the visual acuity of those, such as engine-drivers, in whom it is a sine qua non, he may be the first to detect the presence of an Argyll Robertson pupil, and thus be led to suspect an early affection of the central nervous system.

Hydatid Cysts of the Pancreas.

Mr. Auvray recently made a communication to the Academy of Medicine on a case which had come under his observation, the pathological interest lying in its rarity. Very few cases of hydatid cyst of the pancreas are recorded in medical literature. Dr. Vegas and Dr. Cranwell, of Argentina, record one instance of pancreatic cyst among 1700 cases of hydatid cyst, and Teichman, in a total of 2452 echinococcus cysts, found 3 in the pancreas. Dr. Villar, of Bordeaux, described in a paper read in 1905 before the Surgical Congress some 13 cases; 6 were discovered post mortem and 7 were operated upon. In 1912 Hauser collected 28 cases, of which 11 had been operated upon with 1 death, and 17 were revealed post mortem. Since Hauser's work 6 cases have been recorded, which brings the total, including Auvray's case, up to 35, of which 17 were diagnosed and operated upon. Distinction must be drawn between cysts originating in the pancreas and those which, arising elsewhere, come into association with that organ by contiguity. Six cases of the latter variety are included in the above statistics. Cysts in the tail of the pancreas are quite exceptional; the majority develop at the level of the head.

Surgical Treatment of Angina Pectoris.

Dr. Danielopolu and Dr. Marcu, of Bucharest, communicated to the Academy of Medicine the results of their observations on the modification of the electrocardiogram caused by excision of the stellate ganglion after ligature of the coronary arteries. When the myocardium has been weakened by occlusion of the coronaries, the excision of the stellate ganglion causes modifications of the electrocardiogram which are of very serious clinical import. Bearing in mind that by the excision of the stellate ganglion the majority of motor nerve fibres and certain coronary vaso-motor fibres are put out of action, and comparing experimental results with the frequently fatal phenomena of myocardiac insufficiency caused by removal of the ganglion, it must be concluded that this surgical procedure may be dangerous in many cases of angina pectoris. The researches of the two Roumanian doctors show that while the excision of the first thoracic ganglion produces important effects on the electrocardiogram, removal of the superior cervical ganglion effects no change. This fact proves that the modifications following excision of the first thoracic ganglion are caused by the blocking of the cardiac motor fibres. Jonnesco's operation consists in the removal of the stellate ganglion along with the cervical sympathetic; but the clinical and experimental results of Danielopolu and Marcu, along with operation results already recorded in medical literature, lead to the conclusion that the stellate ganglion should not be interfered with in this condition. The operation proposed is as follows: excision of the cervical sympathetic, leaving the superior cervical ganglion and the first thoracic ganglion, resection of the vagus and all its branches which supply the thorax, resection of all the rami communicantes uniting the inferior cervical ganglion and the first thoracic ganglion to the lowest cervical nerves and the first dorsal. The advantage of this operation is that while a large number of cardio-aortic sensory fibres are resected, the important afferent fibres which pass through the stellate ganglion remain unimpaired.

Conference on Hereditary Syphilis.

Speaking at a dinner held in connexion with the conference on hereditary syphilis, Mr. Durafour, Minister of Labour, Hygiene, and Social Welfare, stated that every year in France syphilis caused 40,000 abortions, 20,000 deaths among infants, and 80,000 deaths among adults. Moral progress, however, has taken place, he said, and syphilis is no longer regarded as a disease to be hushed up. As regards treatment, every day brought forth some new remedy. The campaign was becoming organised, but the State could not at present grant more than 4 million francs annually for this purpose, and there were only 450 organised centres in France.

An Index of Scientific Journals.

Although Paris abounds in large and rich libraries, it is often a very difficult matter for the research worker to know just where is filed the special scientific journal he seeks. Thanks, however, to Mr. Alfred Lacroix, permanent secretary of the Académie des Sciences, this difficulty has been removed. He conceived the idea of compiling a general inventory of the scientific journals available in the Paris libraries, indicating where each journal could be consulted. The first section of this index appeared last year, and the second, from M to Z, has just been published. The journals are classified alphabetically according to the first letter of their titles. With the help of MM. Léon Bullingaire and A. Richard, Mr. Lacroix has collated more than 17,000 journals, defunct or extant. A third section of the work will be published in a few months, containing geographical and analytical tables, to assist the inquirer who is not sure of the exact title of the journal he requires. The index is on the same lines as, but of wider scope than, the excellent index which Prof. Leiper has dedicated to those who have made the weary pilgrimage of your London libraries.

BERLIN.

(From our own Correspondent.)

Visit of Spanish Medical Men.

A party of leading Spanish medical men recently visited the medical institutions of Germany. They travelled from Cologne and Hamburg to Berlin where, notwithstanding the holidays, a special meeting of the united medical societies was convened in their honour, Prof. Kraus, President of the Berlin Medical Society, being in the chair. The Dean of the Berlin Medical Faculty and President of the Pathological Society, Prof. Lubarsch, welcomed the guests in a Latin address; Prof. Ferran, of Madrid, read a paper on the mutation of the Koch bacillus and the prophylactic vaccination of children against tuberculosis which had given favourable results. A report on the study of medicine and scientific research in Spain was given by the leader of the Spanish medical men, Prof. Rosell, of Barcelona. The party then visited the home for tuberculous children, the infants home, the Westend and Virchow Hospitals, and the Robert Koch Institute. Although a great number of medical men were away on holidays the meeting was well attended, as was the dinner at which the Spanish doctors were entertained before they left Berlin for Munich.

A Plea for Modern Dress.

The modern fashion in dress has been the subject of many and severe criticisms in this country by moralists, women's associations, and the clergy of every religious denomination because of its alleged indecency. Prof. Friedberger, of Greifswald, however, has taken up the cudgels on behalf of the modern girl, for, speaking as a hygienist, he has recently stated that modern fashions for women are almost ideal and in every respect preferable to male attire. The modern fashion not only allows free access of air and light to the body, but it has an educational influence by compelling women of every class to extend their ablutions beyond the hands and face. The advantage of the modern shoe, which only covers the heel and the toes, leaving the other parts of the foot free, is that the perspiration evaporates easily. Short frocks and very thin stockings of porous material expose the legs to the salutary influence of the sun and the air, while arms, neck, and shoulders, which have no cover at all, benefit in proportion. The "bobbed" or "shingled" coiffure, which has replaced the former fashion of wearing great masses of hair and artificial tresses, together with the light modern hat made of thin straw or felt, leads to good ventilation of the head. With the disappearance of the corset chlorosis has become almost unknown among the rising generation. Chills are less frequent in women than in men. The dress of men, notwithstanding the increased amount of physical exercise now taken, has not undergone such a radical revolution as that of the female sex. It is true that the high collar and the starched shirt have disappeared except for evening dress and that shoes have taken the place of boots, but the high waistcoat still exists. Prof. Friedberger makes proposals for reform which, however, will probably not meet with the approval of fashionable circles. Instead of long trousers, breeches should be generally worn in summer, as is already the mode for sporting purposes. A combination of shirt and pants similar to that worn by ladies should become the rule. A collar, even a soft one, Prof. Friedberger holds, is highly unhygienic and should be replaced by a sort of decolleté. Sporting dress should be generally worn in offices and for visits. Prof. Friedberger found that the dress of his assistant weighed 3229 g., while his wife's clothes weighed only 741 g. There is no reason why in an office the clerks should wear dress which is five times heavier and 20 times less hygienic than that of their lady colleagues.

A Penholder in the Abdominal Cavity.

Before the Surgical and Gynæcological Society of Hamburg Dr. König showed the case of a woman, 42 years of age, who had had several normal births and miscarriages. The last normal birth had happened one year ago. In the spring of this year a miscarriage had occurred and a putrid fœtus was removed by a medical man. She was conveyed with high fever to the Hamburg General Hospital where, besides the symptoms of abortion, a tumour of the uterus was found. It was believed that a myoma of the uterus infected by the septic abortion was present and the uterus accordingly removed. In the course of the operation, however, a piece of vulcanite penholder, 4 cm. in length, was found between the bladder and the uterus. The woman admitted that she had introduced the penholder into the uterus four years ago to produce abortion. The penholder had obviously penetrated the wall of the uterus into the peritoneal cavity. It is remarkable that a foreign body remained within the peritoneum for four years without producing any symptoms and without preventing subsequent normal births until it was detected in the course of an operation.

A Curious Verdict.

A well-known alienist had been asked by the family of a patient to give a certificate of insanity for the purpose of a divorce. He did so and charged a fee of M.1000 (£50), which was paid. As the certificate was eventually not required in the suit, the family asked the medical man to refund part of the fee, which he, of course, declined to do. The family accordingly prosecuted the medical man before the special Anti-Usury Court, alleging that the sum charged was too high. The defendant pleaded that the case had been a specially complicated one, that he had to examine the patient on three occasions for several hours at a time, and that his certificate was based on scientific deductions. In spite of these facts the court gave a verdict against the defendant because the fee was held to be not in accordance with the service rendered, and that the case thus fell under the Anti-Usury Act. The medical man was condemned to refund M.700, and moreover, in addition a fine of M.150 (£7 6*s.*) for usury was imposed. This verdict has aroused much interest because the provisions of the Anti-Usury Act are directed against overcharging for food, clothes, and other necessaries, and therefore according to this ruling a medical certificate falls into a category that appears a little strange.

PUBLIC HEALTH ADMINISTRATION.

ADMINISTRATIVE MACHINERY.*

(*Continued from p. 773.*)

IX. Japan.

The Empire of Japan covers an area of 236,000 square miles and has a population of 80 million (339 persons to the square mile). There are four large islands and over 4000 small ones.

Central Health Organisation.

The first body created in Japan for sanitary administration on a scientific basis was the medical bureau which was established at the Department of Education in 1873. Before this time there were hardly any health regulations; the "Medical Code," which was drafted in the following year, was the first unified medical statute. In 1875 the bureau was transferred to the Home Department, and since then the Ministry of Home Affairs has been responsible for the health services. The Sanitary Bureau, as it is now called, manages all the general sanitary administration except industrial hygiene, which comes into the sphere of the Bureau of Social Work. It is divided into a public health section, a medical section, and sections for the prevention of chronic and of acute infectious diseases. There are 19 members of the staff of the bureau under a director, and there are another 19 officers who act in a temporary capacity as experts. These figures include clerks. School hygiene is in charge of the Ministry of Education; the Navy and War Departments also have medical bureaux, whilst railway and prison sanitation come under the control of the Ministries of Railways and Justice. Besides these administrative bodies there are three advisory councils—namely, the Central Board of Health, the Council for the Investigation of the Japanese Pharmacopœia, and the Board for the Investigation of National Hygiene. The principal function of these bodies is to frame advice in response to inquiries made by the administrative departments, but they may put forward their views without being consulted. The Board for the Investigation of National Hygiene, which is under the chairmanship of the Minister for Home Affairs, is not a duplicate of the Central Board of Health, but is occupied in considering new measures which may be required by the unsatisfactory state of the public health. The Central Laboratories include the Infectious Diseases Investigation Institute, attached to the Imperial University, which manufactures sera, vaccines, and the like; the Hygienic Laboratories at Tokio and Osaka, which are responsible, amongst other things, for the examination of drugs; and the Research Institute of Nutrition. All of these are under the supervision of the Home Department.

Local Health Organisation.

The provincial bodies for sanitary administration are the local governors, chiefs of police stations, and chiefs of cities, towns, and villages, in addition to custom house and port quarantine authorities. In provinces the governors are the highest officials, and under them are the police departments in which are established sanitary sections to take charge of health affairs. To each of these sanitary sections experts of various kinds and a laboratory are attached. In the Tokio prefecture responsibility for sanitary administration is divided between the Governor and the Inspector-General of the Metropolitan Police, but it devolves mainly on the latter, and there is a sanitary department in the Metropolitan Police Board. The intermediate provincial authorities in Japan are the heads of subprefectures and the chiefs of police stations. As a rule, however, sanitary affairs are supervised by the chiefs of police stations, who generally have jurisdiction over subprefectures and cities, and look after health conditions therein. Cities, towns, villages and their heads have also public health responsibilities of their own, in accordance with the laws and regulations. Most cities and towns have a sanitary department and a hygienic laboratory, but in villages certain officials represent the whole health organisation. There are six ports with permanent health quarantine organisations, and the customs authorities take charge of the procedure. If temporary quarantine is needed provisional quarantine stations may be set up, and these come under the supervision of the local governor and the immediate charge of the chief of the police department of the prefecture concerned. Rural sanitation has been very elementary, and measures are being devised for its improvement on the basis of elaborate investigations which have been undertaken; but these are still incomplete. In large cities there are municipal disinfecting stations, which despatch sanitary squads for domestic disinfection. In the villages the work is undertaken by the local sanitary official, and there are lecture courses for such persons to instruct them in the work. There are regular factory inspectors attached to the staff of local governors, and a great many private organisations are interested in improving industrial conditions.

Hospitals, Schools, and Training.

Hospitals are at present controlled by the regulations of the local prefectures rather than those of the Minister. At the end of 1913 the available beds were accounted for as follows: general hospitals—public 7628, private 48,884; hospitals for infectious diseases, 25,037; isolation wards, 74,910; and hospitals for licensed prostitutes, 5000 beds. (In Japan there were over 50,000 licensed prostitutes in 1923.) The total number of beds available for tuberculosis was about 3000 in 1923, and for leprosy about 5000. The care of *schools* is in charge of the Section of School Hygiene in the Ministry of Education, and there are specialists attached to each prefectural local government. Public schools appoint school physicians, who act under the instructions of the central authorities, and private schools are following this example. Nurses are frequently employed as well. There are many training schools for *medical practitioners*, and the total number of these was over 43,000 in 1923 (7·36 per 10,000 of the population). The examinations for a practising diploma include the subject of hygiene. Midwives are required to pass an examination or take an approved course lasting two years, and there are about 40 schools of midwifery. At the end of 1923 there were over 39,000 midwives. Nursing is governed by similar regulations, but not more than one year's training is needed before application can be made to the local governor for permission to practise. There are also regulations dealing with acupuncture and moxa-cauterisation, for the practice of which four years' study is required. Much attention has recently been given to *health propaganda*, which is carried on by pamphlets, cinemas, lectures, and exhibitions, and by voluntary organisations, and there is a *Health Insurance Act*, which compels insurance by workers employed under the Factory or Mining Acts, provided that their income is below a certain figure.

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* Based on a Series of Reports on National Health Organisation to the Health Section of the League of Nations. Obtainable in Great Britain from Constable and Co.

Statistics are collected by the Public Health Section of the Ministry for Home Affairs.

THE LONDON MEDICAL EXHIBITION.

(Concluded from page 831.)

LAST week an account was given of exhibits classified broadly under the heading of Drugs and Foods. We now deal with the following exhibits: Instruments and Appliances, Spas and Waters, and Medical Publishers.

INSTRUMENTS AND APPLIANCES.

Among the large assortment of surgical instruments and appliances shown by MAYER AND PHELPS (Chiron House, 59/61, New Cavendish-street, W.), much interest was taken in the artificial larynx for use after complete extirpation of the larynx, and in the Yates set of instruments for exploration of the nasal sinuses. A new jack for Davis's gag was also shown, and the Reavell-Moseley Electric Rotary Pump for pressure and suction was examined with interest by a large number of visitors.—DOWN BROS., LTD. (21 and 23, St. Thomas's-street, S.E.), showed surgical instruments and appliances in wide variety, many of them being made in stainless steel. The exhibit included the "Up-to-Date" Operation Table with oil pressure pump for raising and lowering, Carruther's Saline Infusion Apparatus, and Keynes' Blood Transfusion Apparatus.—JOHN WEISS AND SON, LTD. (287, Oxford-street, W.), who make a feature of rustless steel, had a good display of general surgical instruments and consulting-room lamps, and drew particular attention to May's electrical ophthalmoscope.—HOLBORN SURGICAL INSTRUMENT CO., LTD. (26, Thavies-inn, E.C.), covered a wide range of surgical instruments and appliances, including Blair Bell's vulva retractor, Cumberbatch and Robinson's diathermy electrodes, mouth gags, urethroscopes, stainless steel forceps and trocars, ophthalmoscopes, auroscopes, bone drills, and so forth.—The GENITO-URINARY MANUFACTURING CO., LTD. (64, Great Portland-street, W.), in addition to a comprehensive exhibit of instruments for bladder and kidney surgery of the latest pattern, prominently exhibited instruments for bronchoscopy and œsophagoscopy, together with diathermy apparatus and apparatus for use in the treatment of venereal disease.—SURGICAL MANUFACTURING CO., LTD. (83 and 85, Mortimer-street, W., and at Glasgow, Belfast, Dublin, and abroad), exhibited medical and surgical apparatus and appliances of many kinds, together with weighing machines, couches, and sterilisers, and made a prominent feature of the Barton Sphygmomanometer.—SCHOLL MANUFACTURING CO., LTD. (1–4 Giltspur-street, E.C.), displayed in great variety foot supports and appliances for the relief and correction of acquired foot troubles, and DE VILBISS CO., LTD. (West Drayton, Middlesex, and 27, Old Bond-street, W.), a collection of medical sprays, some of which have a convenient adjustable tip.

One of the features of ALLEN AND HANBURYS, LTD. (37, Lombard-street, E.C.), large exhibit of surgical instruments and accessories was the St. Bartholomew's Hospital Pattern Operation Table with several important improvements. Among exhibits attracting particular attention were a motor blower and suction apparatus which can be run off any current, is portable, and is comparatively silent in working, and a transformer and resistance which is economical in working and can be used for many purposes. Mercury-vapour arc lamps were shown in operation and the use of the carbon arc and tungsten arc were also demonstrated.—Another firm making a special feature of artificial light treatment was GENERAL RADIOLOGICAL AND SURGICAL APPARATUS CO., LTD. (Incorporating M. Schaerer, S.A.) (204/6, Great Portland-street, W.), who showed many forms of X ray and artificial light apparatus. A powerful high-tension transformer of small dimensions called the "Peo" for use with all types of Coolidge tubes and gas tubes attracted attention, as did also the Artificial Mountain Sun Quartz Lamp, constructed to work successfully from alternative current direct. A combined couch and screening stand was also shown, and many other useful appliances. The Model X de Quervain Operation Table fitted with pump action allowed every possible position to be obtained with little exertion on the part of the operator or his assistant.—T. CLARK AND SON (69, Marylebone-lane, W.) exhibited many forms of ultra-violet ray lamps and demonstrated economical methods of using the tungsten arc. One lamp was designed for treating five children at a time with five-minute exposures. Among other apparatus of this kind attracting attention was a bath for the whole body, fitted with six lamps. The patient is enclosed by means of curtains fitted with windows that cut off the ultra-violet rays from the operator.—X RAYS. LTD. (incorporating F. R. Butt and Co., Ltd.), 11, Torrington-place, Gower-street, W.C.), drew attention to a "New" X ray outfit especially designed for cottage hospitals, nursing homes, and for general practitioners. It occupies the space of an ordinary wardrobe, is entirely self-contained, and has one control switch only. Lamps for sunlight treatment were also prominently exhibited.—KODAK, LTD. (Kingsway, W.C.), had an interesting exhibit of "Dupli-Tized" X ray films and negatives and prints demonstrating the utility of the photographic materials made by this firm.—"RADIO-COIL" ELECTRO MAGNETIC BLANKET, LTD. (4, Manchester-street, Manchester-square, W.). The appliance shown by this company consisted of a blanket the surface of which is covered by parallel spirals of wire joined in series through which an electric current can be passed. The voltage is controlled by a resistance. A specially constructed pad containing a coil of wire can be used in conjunction with the blanket to intensify the treatment at local spots. Many claims are made for this appliance in the treatment of acute and chronic diseases which can only be confirmed by trial.

CHAS. HEARSON AND CO., LTD. (68, Willow-walk, Bermondsey, S.E., 27, Mortimer-street, W., and 24, Fenchurch-street, E.C.), in addition to a wide display of biological apparatus, made a prominent feature of a new dark field condenser, combined with an arrangement for giving transmitted light, devised by Prof. L. Arzt, of Vienna. This takes the place of the ordinary condenser and can be fitted to any microscope. Reichert microscopes were also shown with combination monocular and binocular eye-tubes, the change being made by the turn of a screw. A feature of these microscopes is that they approximate in height to the monocular instrument. Another microscope of unusual interest can be affixed to a wall by a bracket, universal joints enabling the instrument to be directed to the eye, skin, or other special part of a living subject.—HERBERT E. KENDRICK (342, St. John-street, E.C.) exhibited several kinds of metabolism and blood chemistry apparatus, special prominence being given to Benedict Portable Metabolism Apparatus, designed for completing metabolism tests at the patient's bedside without analysis; the Clinical Colorimeter, for the estimations of uric acid, urea, creatinine, and sugar in the blood; and the Clinical Blood-Sugar Outfit, designed for blood-sugar determinations by medical practitioners who lack the time and convenience for preparing the solutions and putting together the necessary apparatus.—HAWKSLEY AND SONS (83, Wigmore-street, W.) showed a wide selection of sphygmomanometers, blood diagnostic instruments, recording instruments of several kinds, blood-urea apparatus, and ophthalmoscopes. The outfit for injection of insulin, as suggested by Prof. H. MacLean, was also shown, as well as the cabinet model Baumanometer standard blood-pressure apparatus.—TINTOMETER, LTD. (Colour Laboratories, Salisbury), who are the sole makers of the Lovibond patents and apparatus for colour analysis, included in their exhibit Dr. Dudley Corbett's Radiometer for use with Sabouraud's and other pastilles, a new and improved form of Oliver's Hæmoglobinometer, and Major H. St. A. Agate's Red Cell Suspensionometer.—SHORT AND MASON (Macdonald-road, Walthamstow, E., and Atlantic House, Holborn Viaduct, E.C.) showed portable and surgery types of sphygmomanometers, clinical thermometers, as well as the thermograph recording thermometer and the micro-barograph, which records most minute changes of atmospheric pressure.—G. H. ZEAL, LTD. (75 and 77, St. John-street, E.C., and St. John's-lane, E.C.), exhibited their well-known and reliable clinical thermometers, some of them designed with the special objects of facilitating re-setting, easy sterilisation, and easy reading of the index.—British Wolmuth Sanawaves Co., Ltd. (25, High Holborn, W.C.), demonstrated apparatus for electro-galvanic treatment, the Inhaling Drug and Apparatus Co. (30, Grosvenor-place, S.W.) exhibited an apparatus which enables any drug to be transformed into an exceedingly fine vapour, W. J. Wilson and Co. (2b, Hand-court and 45, Bedford-row, W.C.) showed artificial limbs, hospital furniture, and radiant heat lamps, and Pedestros, Ltd. (Roehampton House, Roehampton, S.W.), had a comprehensive display of the latest types of light artificial limbs.—Reliance Rubber Co., Ltd. (212/213, Upper Thames-street, E.C.), displayed rubber goods made by a new process which gives high tensile strength and great durability, and A. G. Sheldon and Co. (59, Weymouth-street, W.) exhibited sterilised surgical dressings and accouchement outfits in sealed tins.—The "Quicksey" Cabinet Manufacturing Co. (10, Cromwell House, Fulwood-place, W.C.) showed medical cabinets for consulting rooms and other purposes.—H. E. Curtis and Son, Ltd. (7, Mandeville-place, W.), showed a wide assortment of belts for surgical purposes, including the well-known abdominal and colostomy supports. The Curtis abdominal support is an admirable appliance for abdominal ptosis, for the protection of abdominal scar tissue during consolidation, for mobile or displaced kidney, and for different forms of umbilical and ventral hernia. This firm also exhibited Kaylene, a colloidal hydrated silicate of alumnia and Colonol, a liquid paraffin of extra high viscosity.—Domen Belts Co., Ltd. (456, Strand, W.C.), exhibited belts, bandages, and supports for pregnancy, accouchement, gastroptosis, umbilical hernia, and floating kidney.

Appliances for the deaf were shown by "Ardente-Acoustique" (95, Wigmore-street, W.) who had a wide range of different types of "Ardente-Acoustique" aids for the deaf which in their improved form are smaller and lighter than hitherto. A feature of these instruments is their inconspicuousness and their perfectly natural tone, reverberation and metallic sounds being practically absent. There is a special type for use in public buildings, while the types for personal use number 30. A special stethoscope for deaf doctors was demonstrated, and the attention of medical men was called to the fact that instruments are always allowed to be tried in their homes by patients.—General Acoustics, Ltd. (77, Wigmore-street, W.), displayed many electrical and non-electrical aids for the deaf. This firm supply the Acousticon for multiple installation for use in churches and in large gatherings. A point is made of the fact that patients are permitted to have the instruments on trial.—W. H. Pettifor (11, Victoria-street, S.W.) showed a large range of electrical aids for the deaf and a test instrument for estimating the most suitable pitch, sound-wave form, and volume of sound for each individual case.

Gas Light and Coke Co. (Horseferry-road, Westminster, S.W.) demonstrated radiant gas stoves and fires, showing at the same time the advantages of gas over coal in regard to atmospheric pollution.

Spas and Waters.

The attractive display by some of the principal spas and watering-places of this country indicated a growing activity among our balneological centres. Unfortunately the advantages of British spas in the matter of treatment is too frequently overlooked, while in these days of enforced economy travelling expenses necessitated by a visit abroad are items of importance. The demand, too, for spa treatment for insured persons added interest to the exhibits.

All the British spas advertised their advantages both for treatment and recreation by photographs, books, and pamphlets giving an analysis of the waters, the technique of particular treatments, and the organisation of the establishments. Bath provides for every form of balneotherapy and electrotherapy. The hot springs are the only ones in Great Britain which rise at a natural temperature of 120° F., and they yield every day half a million gallons of the most highly radio-active mineral water in this country.—Buxton has radio-active thermal waters at 82° F., and one of the strongest chalybeate springs in Great Britain. The thermal water emerges from the limestone rock by nine springs, which are identical in temperature and composition.—Droitwich, a natural brine baths spa, is a summer and winter resort which has many attractions, is sheltered from cold winds, and the brine which is supplied from springs 200 ft. below the town is about ten times the strength of the ocean. The treatment consists of baths and douches, in some cases in combination with massage either given under the spray in the form of massage douche baths or administered in the form of dry massage.—Harrogate has 87 springs, of which 16 are used internally, and all continental methods of treatment are available in addition to special treatments originating at this spa. Latest developments include a nose and throat department and the ultra-violet ray treatment.—Torquay, which has an equable climate, has available 60 different treatments and is equipped with all the latest appliances. Special features are the seaweed baths for muscular and articular rheumatism and the Dartmoor peat baths and packs.—Messrs. Ingram and Royle, Ltd. (Bangor Wharf, 45, Belvedere-road, S.E.), importers and exporters of natural mineral waters, salts, and pastilles, prominently displayed their bottled Vichy Célestins, Evian-Cachat, Carlsbad, Hunyadi Janos, and other waters. A pamphlet issued by this firm shows how the Contrexéville cure can be continued by the patient at home.

Medical Publishers.

Medical books were shown by :—

Adlard and Son and West Newman, Ltd. (23, Bartholomew Close, E.C.); Baillière, Tindall and Cox (8, Henrietta-street, W.C.); William Heinemann (20, Bedford-street, W.C.); H. K. Lewis and Co., Ltd. (136 and 140, Gower-street and 24 and 28, Gower-place, W.C.); and Stanley Phillips (45, Brondesbury-road, N.W.).—The Food Education Society (24, Tufton-street, Westminster, S.W.) made a feature of books and pamphlets on food cookery and hygiene, notable among them being a series of little books entitled "Facts for Patriots," dealing with the physiological and economical uses of food. These books deserve a wide publication.

The Lancashire and General Assurance Co., Ltd. (Lancashire House, 8, Bucklersbury, E.C., and Oxford, Cambridge, and London), made a special feature of their Comprehensive Medical Policy at a premium of £20 per annum, covering a complete medical indemnity with an unlimited amount for damages and cost, sickness and accident, motor-car, contents of house with full protection for servants under the Workmen's Compensation Act, and against other liabilities.

The Services.

ROYAL NAVAL MEDICAL SERVICE.

Surg. Lt. (D) L. M. Hughes to the *Impregnable*, tempy.

ROYAL ARMY MEDICAL CORPS.

ARMY RESERVE OF OFFICERS.

Maj. E. N. Graham, late Malay States Volunteer Res., to be Maj.

TERRITORIAL ARMY.

Lt. B. G. Thompson resigns his commission.

TERRITORIAL ARMY RESERVE OF OFFICERS.

Capt. H. M. Brown, from the Active List, to be Capt.

ROYAL AIR FORCE.

Flying Officer W. J. Hutchinson is transferred to the Reserve, Class D2.

INDIAN MEDICAL SERVICE.

Capts. Bankim Behari Das and Ram Chand Mahajan relinquish their tempy. commns.

The King has approved the retirement of Maj. A. G Coullie.

LECTURES ON HYGIENE TO CADETS.

A course of lectures on hygiene and sanitation are to be given in each term to the cadets of the Senior Division at the Royal Military Academy and the Royal Military College by an officer nominated by the Director-General, Army Medical Services.

Royal Portsmouth Hospital.—The enlargement of this hospital has become so urgent that the governors have appointed a special committee to consider the whole question of further hospital accommodation in Portsmouth. Dr. Scott Ridout states that the waiting-list includes 19 cancer patients. Meanwhile an endeavour is being made to purchase a small property on Portsdown Hill for the provision of a convalescent home for children. It is believed that by the erection of simple chalets accommodation can be found for 50 children at a time.

THE MANCHESTER BABIES' HOSPITAL.

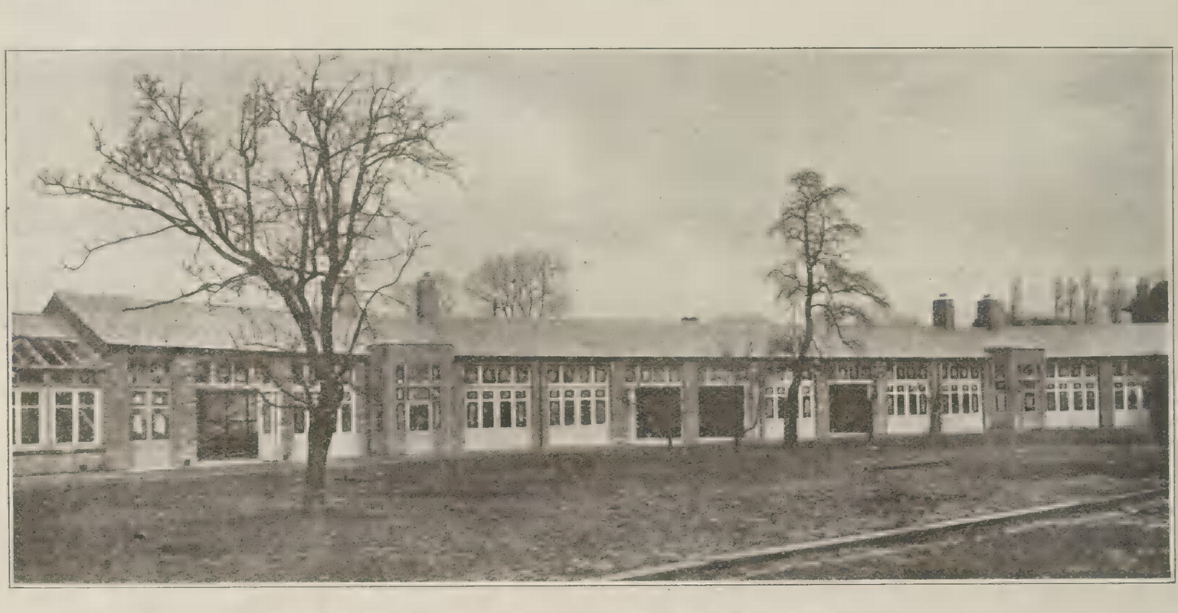
THE new buildings of the Manchester Babies' Hospital were opened on Oct. 19th by the Earl of Derby.

The hospital began its career in 1914, on the first day of the war, in a semi-detached house which accommodated 12 infants and the nursing staff. By 1918 it was already recognised as a useful training centre for welfare workers and the number of patients had risen to 30, all of them under 1 year of age. The transfer of the work to the grounds of Cringle Hall, Levenshulme, in 1920 was a further step in the desired direction, and it is here that the new buildings have been put up which will go far towards realising at last the ideals of the founders. The objects of the hospital as it now stands are three: to give institutional treatment to babies suffering from disorders of nutrition, including epidemic summer diarrhœa and rickets; to train girls in the care of infants; and to give opportunities for research into disorders of nutrition. The new arrangements are the fruit of much anxious thought and study, and they should provide a hospital which will be a model for others. Cringle Hall itself is to be used as an administrative block and for the accommodation of the three nursing mothers who supply breast milk for use in the wards; an adjoining house called Northbrook has been bought as a nurses' home, whilst the new block, which is illustrated above, is designed for the 80 patients. Twenty of these will be children below 2 years of age who are suffering from rickets or some other nutritional disorder.

The wards, ten in number, are on the ground floor, and the central four face due south. Running to south-east and south-west at an obtuse angle to one another are two large wards, and each of these ends in a smaller ward and a sun parlour whose walls and roof are mainly of glass. In a sheltered angle are two smaller rooms intended for specially delicate or premature babies, and the fronts of the wards are made with doors that fold back, so that in summer they will actually be open-air verandahs. The east and west wards have large windows behind, but to the rear of the central wards runs a corridor and on the other side of this are the bathrooms, two at each end, with the diet kitchen and dispensary in the centre. The wards are divided into units of 20 beds, and for each 20 is supplied a bathroom and changing room and large ward store cupboards, the whole being so arranged that any ward and its service can be completely isolated from the others. The divisions between the wards are of glass, and the whole length of the building can thus be easily supervised. Two baths are supplied for each 20 infants, and these baths are specially designed and fitted with spraying tables. Attached to the wards is a block containing a small laboratory and an X ray room with equipment for electrotherapy and massage.

Along the front of the hospital and at each end run concrete terraces so that the cots can be wheeled out into the sunshine: around these are lawns, with a few shady trees, and the building itself, as should be clear from the description, is specially adapted for open-air treatment. At some distance away a temporary house, with three small rooms and a bathroom, has been fitted up for the isolation of infectious cases for observation. A covered corridor connects the new block with the main building, and in this is a dining-room for the nurses and a large room for use as a library and doctor's office, where lectures may be given. Here also are the quarters of the resident medical officer and the matron, the board room, and the secretary's and matron's offices. In the adjoining house good quarters are provided for the nursing staff; there are common rooms for sisters and nurses, a study room, and a sewing room, besides pleasant bedrooms. It is believed that the conditions will be very satisfactory.

The record of the hospital is excellent and the extension of its facilities is likely to lead to useful work. During last year 223 children were treated. Dr. Catherine Chisholm, the chairman of the medical committee, has shown how the regular provision of milk from wet nurses may be placed on a satisfactory basis, and there is a good system by which a certain number of beds may be allotted to a medical woman, not on the honorary staff, who desires to gain special experience in infant work. Recently these beds have been used, under the direction of Prof. H. S. Raper, by Dr. E. F. Willock, the medical registrar, for her research on the value of oxygen administration in the treatment of atrophic infants. The hospital is a centre for post-graduate instruction, whilst its usefulness in the scientific education of nurses and welfare workers is already well known. The address is Burnage-lane, Levenshulme, Manchester.


The Manchester Babies' Hospital: The new wards before completion.

Public Health Services.

REPORTS OF MEDICAL OFFICERS OF HEALTH.

THE following are some of the health statistics of three cities for 1924 :—

Name of city.	Estimated mid-year population (R.G.).	Birth-rate.	Death-rates per 1000 of the population.				Death-rates per 1000 births.		
			All causes.	Tuberculosis.	Cancer.	Resp. diseases with influenza.	Neonatal mortality.	Infant mortality.	Maternity mort. from childbirth.
Birmingham ..	946,980	19·2	11·6	1·10	1·30	2·5	35	83	3·9
Bradford ..	290,200	16·9	14·9	1·05	1·50	3·9	40	92	4·0
Leicester ..	241,800	18·1	12·1	1·43	1·16	2·1	29	79	3·2

Birmingham.

Sir John Robertson says the general health of Birmingham during 1924 may be considered to have been satisfactory, and that the death-rate was a low one, considering the amount of unemployment and the proportion of the people who are wretchedly housed. The death-rate, he says, is only a crude measure of estimating the healthiness of a town and the amount of sickness ought to be considered. During 1924 it was ascertained that in the public health department and in a number of industrial concerns with good working conditions the average amount of sickness among males was 10 days per annum and among females 11. In other words, about 1 employee in every 30 was permanently absent. Influenza and respiratory catarrhs accounted for from one-third to one-half of the sick absence. Sir John Robertson states that the methods of birth control are becoming widely known among young people and lead to promiscuous intercourse without inconvenient results. A knowledge of such methods also incidentally supplies information as to the prevention of venereal disease. He considers that a spread of this movement may be a serious menace to the family life of the country. The eugenic idea of improving the human stock is impossible so long as our present customs exist, and is there any reason to suppose that, granted equal environmental conditions, it would be better to breed from the upper or the lower half of society? During the past 20 years the birth-rate in Birmingham has been materially reduced, and if the rate of reduction continues for another 20 years the birth-rate will be lower than the death-rate. Sir John Robertson states the arguments in favour of large families, and thinks that since birth control is much more likely to be put into operation by the skilled artisan and middle class than by the poorest of the community, it is consequently liable to be dysgenic.

Illustrations are given in the report of a building which has been adapted for light treatment. The new Carnegie Institute has also been so equipped, and in November a light department was opened at Yardley Road Sanatorium for the treatment of various forms of tuberculosis by ultra-violet rays. Mr. W. Brennan De Vine, F.R.C.V.S., reports on tuberculosis and the milk-supply. Of 303 samples of milk from outside farms, 26 were found to be infected with tubercle. As the result of visits to the farms 23 cows affected with tuberculosis were found and slaughtered. It was not possible to trace all the offending cows because in several instances cows had been disposed of between the time of taking the sample and the visit of the veterinary inspector to the farm. Three cows were found in the city cowsheds suffering from tuberculosis of the udder and were slaughtered by arrangement with the owners. At the beginning of 1924 there were 18 herds included in the Birmingham scheme for securing tubercle-free herds. One of these herds dropped out during the year owing to the large number of reactors. Out of 129 head of cattle in this herd 37 failed to pass the test and two were doubtful. During the year ten owners applied to be included in the scheme, but three of them gave the matter up. The cows in these three herds numbered 36, 38, and 24, and the number of reactors were 23, 25, and 13 respectively. At the end of the year there were 24 herds left in the scheme, which was an increase of six over the previous year. There were 431 cows tested for the first time, and of these 223, or 51·7 per cent., failed to pass the test. The herds included in the scheme are classified according as to whether they are maintained by breeding, by purchase, or by both methods. In the case of the one non-breeding herd 19 cows were tested and eight failed to pass the test. In the case of the four herds maintained by both breeding and purchase there were 20 failures in 115 tests, 37 in 132, 19 in 53, and 2 in 21 respectively. There were 12 herds maintained by breeding; of these, 8, including 283 head of cattle, furnished 22 reactors, while 4, with 55 head of cattle, had no reactors. An investigation was carried out during the year of the methods employed by various dairymen for the washing of milk bottles. The results indicated that steaming was the only satisfactory process, and that methods of washing by hand with or without the use of some simple machinery are not satisfactory.

Dr. Ethel Cassie submits the first annual report of the Carnegie Institute, which replaces the Farm-street Centre, and has already more than justified itself. There were 145 dental clinics held, with 1883 attendances of mothers and 683 of children under 5 years of age. Anæsthetics were used 1088 times. In addition to other advantages there is an observation ward, and Dr. Cassie considers that it would be difficult to exaggerate the value of such a ward in connexion with a large child welfare centre. Encephalitis lethargica showed a greatly increased prevalence in Birmingham during 1924. There were 282 cases notified with 44 deaths. A description of the types most prevalent in Birmingham was prepared by Dr. Stanley Barnes and circulated to all the medical practitioners in the city. During May, 1925, an inquiry into the condition of the 229 survivors of acute attacks during 1924 showed that only 46 had at that time made a complete recovery.

Bradford.

Dr. John J. Buchan's report on smoke inspection shows that there were 15 prosecutions and that the total penalties and costs only amounted to £13 11*s*. He expresses his regret at such nominal fines which may well place the offending party in a better position than the manufacturers who try to do their duty. Mr. W. Halstead, the veterinary inspector, reports that the average number of dairy cows in the city is 3406, housed in 276 dairy farms. They produce about 7500 gallons of milk in the day, whilst about 7000 gallons come into the city by rail or road. Among the city cows 18 cases of tuberculosis of the udder and 8 cases of advanced tuberculosis were found. Of these 26 cows 14 were slaughtered, while 12 were removed from the city and lost sight of. No "designated" milk is produced within the city. At the municipal milk depôt over 51,000 gallons of milk were obtained from six sources outside the city, including 8760 gallons of Grade A tuberculin-tested milk. During the year 90 samples of shell-fish (65 of mussels, 20 of cockles, and 5 of oysters) were submitted to the bacteriologist; 86 of the samples were obtained at the wholesale market within a very short time of delivery by the railway companies. Of these 13 were reported to be good, 53 were reported to be bad, and 20 to be doubtful. The tuberculosis officer, Dr. H. Vallow, reports as to the unsatisfactory results which, up to now, have been obtained in the training of tuberculous ex-Service men under the 1922 scheme.

Of 35 men referred by the Ministry of Pensions to the tuberculosis officer, 16 were considered suitable for training. Of the 11 who accepted it, 8 completed their course, and the final result was that only one continued in the occupation in which he was trained. Though the results as regards work were poor, Dr. Vallow points out that the long treatment and training has had a lasting effect on the health of these men. The experience gained has also been useful, and an extensive survey of the various methods of providing employment for the tuberculous is being made. The number of new houses (694) was larger than in any year since the war; 375 of them were municipal. In addition to those completed there were at the close of the year 639 municipal houses in course of erection, and 484 houses, mostly of a superior type, being built by private enterprise. In spite of this, many very serious cases of overcrowding came to the knowledge of the department during the year, and at the close of the year applicants for new houses numbered 5493, of whom 4012 were ex-Service men, 2775 of them living in lodgings.

Leicester.

Dr. C. Killick Millard says the most unsatisfactory feature of the year's record was the serious epidemic of diphtheria which began in the third quarter and continued for several months. There were 429 cases reported with 34 deaths. The "Schick" test has not hitherto been used at the isolation hospital, and seven of the staff contracted the disease, one of the cases ending fatally. As a result the staff were inoculated before going on duty in the diphtheria wards. Subsequently two nurses and the medical superintendent had mild attacks of the disease, probably because sufficient time had not elapsed to establish their immunity. Small-pox, after being absent for 19 years (with the exception of one case in 1913), again visited the city in 1924. There were two importations resulting in five cases, all very mild. During 1925 the disease has again been introduced and, though this last outbreak has been more serious, there have been no fatalities as yet. The principal difficulty has been the prevailing mild type of the disease and the absence of many of the classical symptoms. With a view to meeting this difficulty the medical practitioners of the city have been invited to attend demonstrations at the small-pox hospital. Dr. Millard points out that the essential difference between the practice in Leicester and elsewhere seems to be that, when a case of small-pox occurs in Leicester, no effort is made to secure the vaccination and revaccination of the general population, but the use of vaccination is confined to contacts. Forty years ago, in 1885, the Leicester Board of Guardians by an overwhelming vote decided not to prosecute for default under the Vaccination Acts, and since then these Acts in Leicester have been virtually a "dead letter." Thus, during the 17 years 1908 to 1924 the percentage of infants vaccinated has been 6·7. There were 22 cases of encephalitis lethargica notified with seven deaths, as against an average of nine cases and five deaths for the four previous years. The Leicester health committee has formed a local cancer committee, which is carrying out statistical investigations and has issued a leaflet of advice to women on the subject of cancer of the breast. Under the heading "goitre" it is pointed out that two or three firms have now placed an iodised table salt on the market. Dr. Millard gives some particulars indicating a hopeful view of the "Spahlinger" treatment of tuberculosis. As regards housing, Dr. Millard states that a "very substantial measure of relief is in sight in the near future." The procedure as regards the cleansing of dirty houses is discussed, and he inclines to the view that it is better for the tenants to do their own cleaning, including whitewashing of ceilings and the treatment of the walls. In Leicester tenants expect their walls to be papered by the landlords. The recent Birmingham case is quoted in which a notice was issued by the city corporation requiring certain repairs including painting and papering, and the Ministry of Health decided that where the plastering was sound and the surface smooth the requirements that an owner shall re-paper the walls shall be satisfied if the walls are stripped, cleansed, and distempered, and that where the ceilings are not to be scraped one coat of whitewash shall be sufficient.

INFECTIOUS DISEASE IN ENGLAND AND WALES DURING THE WEEK ENDED OCT. 10TH, 1925.

Notifications.—The following cases of infectious disease were notified during the week: Small-pox, 34; scarlet fever, 2287; diphtheria, 1118; enteric fever, 68; pneumonia, 842; puerperal fever, 54; cerebro-spinal fever, 7; acute poliomyelitis, 12; acute polio-encephalitis, 3; encephalitis lethargica, 36; dysentery, 7; ophthalmia neonatorum, 120. There were no cases of cholera, plague, or typhus notified during the week.

Deaths.—In the aggregate of great towns, including London, there were 4 deaths from enteric fever, 14 from measles, 8 from scarlet fever, 20 from whooping-cough, 28 from diphtheria, and 57 from influenza, as compared with 51, 41, 26, and 11 in the preceding weeks. In London itself there were 7 deaths from diphtheria, 2 from whooping-cough, and 12 from influenza, as compared with 9, 5, 7, and 1 in the preceding weeks.

Obituary.

CHARLES FREDERICK SONNTAG, M.D., CH.B. EDIN.

Dr. C. F. Sonntag, whose death occurred at Hampstead on Oct. 10th, was born at Glasgow 38 years ago, and was educated at Edinburgh and at the Middlesex Hospital. He graduated as M.B. in 1910 and as M.D. (with honours) in 1913, and held obstetrical and surgical appointments in Scotland. Soon after the outbreak of war he joined the Royal Army Medical Corps and saw active service as regimental medical officer in several units of the Salonika Expeditionary Force. In 1916, being incapacitated by tuberculosis from further foreign service, he was invalided home and became medical officer to the Red Cross Clinic for Disabled Officers in Great Portland-street. Here he threw himself with energy into the investigation and application of the new methods of physical treatment which had been brought together, and proved his ability by his researches. He produced papers dealing with the influence of temperature on muscular work, with ergometers, and with thermal debility. Thence he was recommended as hydrologist to the Military Orthopædic Hospital at Shepherd's Bush, where he pursued his studies on stimulant and sedative baths, and though in 1919 he accepted the post of prosector and anatomist to the Zoological Society of London and took up research on comparative anatomy, he continued as a hydrologist in consultant practice.

In 1922 Dr. Sonntag was appointed demonstrator in anatomy at University College. During the six years he worked at the Zoological Gardens he published in the Proceedings of the Society no less than 30 papers on comparative anatomy, all of which bore witness to the thorough and painstaking way in which he carried out his work. His publications included a series of papers on the comparative anatomy of the tongues of the mammalia, and were mainly descriptive in form. His later papers dealt with the anatomy and physiology of the anthropoid apes, and in 1924 he summarised his findings in a treatise on the morphology and evolution of the apes and man, which will be the standard work on the subject for many years to come.

Dr. Sonntag's early death has removed a man whose critical enthusiasm has left its mark on both the subjects in which he interested himself.

RUPERT CECIL CHICKEN, F.R.C.S. Eng., L.R.C.P. Lond.

Mr. R. C. Chicken, consulting surgeon to the Nottingham General Hospital, died on Oct. 3rd at the age of 75. After studying at Guy's Hospital, he held the appointments of house surgeon and obstetric assistant there, and became registrar at the Evelina Hospital. He became F.R.C.S. in 1875, and was appointed prosector of anatomy at the Royal College of Surgeons. Later he returned to Nottingham and was unexpectedly left in charge of a large mixed general practice. His training and natural aptitude fitted him for surgery, and in spite of other work he was able to maintain his operative skill; in 1891 he was elected to the staff of the Nottingham Hospital, and in 1892 was president of the Nottingham Medico-Chirurgical Society. Mr. Chicken was the author of a long series of surgical papers, and was in addition a man of wide reading and culture, with an active interest in archæology. He retired from the executive staff of the hospital in 1907, but during the war served as surgeon to the Whipps Cross War Hospital, Leytonstone. He leaves a widow, one son, and two daughters.

HAROLD MAXWELL LEFROY, M.A. Camb., F.E.S., F.Z.S.

The science of entomology has sustained a severe loss by the untimely death at the early age of 48 of Prof. Harold Maxwell Lefroy, professor of entomology at the Imperial College of Science and Technology. Prof. Lefroy died as the result of an accidental exposure to poisonous gas in the course of experiments designed to discover a suitable method of dealing with flies and their maggots. He lay unconscious for three days and in spite of all possible medical assistance succumbed in the evening of Wednesday, Oct. 14th.

Harold Maxwell Lefroy was educated at Marlborough and King's College, Cambridge. He took the Natural Sciences Tripos, choosing zoology for one of his subjects. At that time the zoology taught in Cambridge was rather of the laboratory and formal type, and it is on record that Lefroy's attention to this aspect of the subject was but half-hearted. The passionate love of insects and their ways seems to have been born in him, and he deserted the laboratory demonstrations in order to practise "bug-hunting" in all the country surrounding Cambridge. After taking his degree, as at that time entomological posts were almost non-existent, he was forced to adopt the profession of teaching natural science in a school. But the memory of his devotion to insects was preserved by his teachers in Cambridge, and when the demand came for a man to go to the West Indies and deal with the pests which were destroying the sugar-canes there, it was Lefroy whom they recommended for the post.

After a successful career in the West Indies Lefroy was appointed as the first Imperial entomologist to the Government of India, and it was during a period of leave in England in 1910 that he was induced by the authorities of the Imperial College of Science to deliver a course of lectures on entomology. The success of this course made the governors of the College resolved, if possible, to secure him permanently, and the next year he became professor of entomology, a post which he retained until his death.

During the war his services, like those of all the rest of the College staff, were placed at the disposal of the Government, and he went to India in 1915 to investigate the silk industry, and in 1917 to Australia to deal with the pests which were destroying grain. His success in grappling with these and other pests is told in a leading article on another page. His immediate relation to medical questions was slight, but during the war, when house-flies and blue-bottles were recognised as disseminators of disease, he devoted considerable time to devising fly-traps of various kinds and measures for dealing with the maggots. It was, indeed, as we have already mentioned, during the course of experiments with gases as a means of destroying flies that he met his death. He leaves a gap in the staff of the Imperial College and in the entomological world which will not be easily filled.

EDMUND ARCHIBALD ARMSTRONG, M.A.

We record with deep regret the untimely death of Mr. Archibald Armstrong which occurred on Oct. 15th at Oxford and Cambridge Mansions in his sixty-seventh year. He had been a valued member of our staff for nearly 30 years.

Archibald Armstrong was the son of the Rev. John Armstrong, rector of Dinder and prebendary of Wells. He was educated at Haileybury, where he was captain of the school, and Jesus College, Cambridge, where he was a Rustat scholar, and at both places he distinguished himself also on the running-track. He graduated with classical honours and was called to the Bar, but turned aside almost at once to literature. He wrote stories and verses for many of the popular magazines, one series contributed mainly to the *St. James's Gazette* appearing in volume form under the title of "Tales from the Temple." This was followed by a novel with a particularly ingenious plot, "Under the Circumstances," while a play supplied to the German Reeds proved a modest success in the old Queen's Hall. He became editor shortly after of the illustrated weekly paper, *Black and White*, but his control of the paper was only partial, and he found the position untenable. During this period he wrote intermittently for various London and provincial papers, and regularly for The Lancet on the legal side of medical affairs, work which he was discharging until his death. We have many reasons for knowing that his well-informed and even pronouncements upon many difficult professional problems were of great value to our readers, while the public derived indirect advantage from much of his work. In this connexion there may be instanced a ruthless exposé of the proceedings of a dangerous group of quacks, who were defrauding women, as well as inciting them to misbehaviour or crime, by the sale of abortefacients.

In the course of general journalism he grew to be a considerable expert in certain artistic fields, with the result that he became one of the managers of the Fine Art Society's gallery in Bond-street, under the late Marcus Huish. Here he was working when the war broke out, when he entered the Censorship Department, where his duties were prolonged some time after the armistice in view of the preservation and arrangement of the records. When this work came to an end he returned to his duties at The Lancet, and also joined the staff of the *Daily Express*, to which paper he was attached at his death, while he resumed his connexion with the Fine Art Society by joining the directorate.

He had not been physically strong for some years and probably worked beyond his powers, but quite recently his health appeared to have much improved, and the announcement of his death will come as a shock to many friends and journalistic colleagues. For he was held in high esteem for his exact knowledge, his careful and accurate methods, his fairness, and unfailing courtesy. We owe him a great debt at The Lancet.

He married early in life the daughter of the late Rev. Lancelot Errington, rector of Midgham, Berkshire, by whom he had one daughter. To these we offer our sincere sympathy.

St. Mary's Hospital for Women and Children. Sir Alfred Fripp describes this hospital at Plaistow as a model as far as the in-patients' department is concerned, but in a backward state in regard to accommodation for out-patients. An endeavour is being made to improve this state of things by the preparation of a scheme which will cost £25,000 eventually, though the first portion of the work is expected to cost no more than £8000.

Correspondence.

"Audi alteram partem."

THE SANATORIUM AND AFTER.

To the Editor of THE LANCET.

SIR,—All who are interested in the solution of the tuberculosis problem will agree with your statement that "the after-treatment of ex-sanatorium patients is one of the most urgent and elusive problems which medical and social science has to face."

Many of those who have been considering for some years this aspect of the question will welcome the admission that "from the strictly medical standpoint . . . . the combination of sanatorium, settlement, training centre, and workshop offers the ideal conditions for after-care." This is the ideal for the general acceptance of which Dr. Varrier-Jones, without much outside support, has, at Papworth, been striving for years, and it will doubtless be a source of much satisfaction to him to find that the success of the pioneer work which he had carried out there has at length received public recognition. On a recent occasion Mr. Neville Chamberlain expressed his complete approval of the settlement plan and stated that henceforth it would receive the full support of the Ministry of Health.

The observation that "settlements can only deal with a fraction of the tuberculous population" should possibly have been slightly modified and to be strictly accurate should read, "are at present only dealing with," but at Papworth alone the fraction is even now ten times larger than is being dealt with under any other combined scheme with which I am acquainted, and when Preston Park, near Maidstone, which has recently been taken over by the British Legion and which at their request is now being reorganised by Dr. Varrier-Jones on Papworth lines, is reopened the fraction will be still larger. Private individuals are, of course, free to support such charitable efforts as appeal most closely to their sympathy, but with regard to public money and quasi public funds the case is different, efficiency and the welfare of the community as a whole are then the guiding principles of action.

Having had somewhat exceptional opportunities of judging of the relative value of the methods mentioned in your annotation I have come to the unhesitating conclusion that the development of settlements on Papworth lines around those of the existing sanatoria which admit of such an evolution holds out the most hopeful prospect of a continuous advance towards the solution of the problem of the after-care of the tuberculous worker, and to that end I propose to devote such energy and influence as I possess.—I am, Sir, yours faithfully,

JAMES K. FOWLER.

Clarges-street, Mayfair, Oct. 19th, 1925.

LUMINAL, BORAX, OR BROMIDE IN EPILEPSY.

To the Editor of THE LANCET.

SIR,—Concerning the relative value of luminal, bromide, and borate in epilepsy, I was interested to read of the very satisfactory results obtained by Dr. Figdor with combinations of bromide and borax. For many years my initial treatment—apart from any general treatment or psychotherapeutic measures necessary—has been to prescribe a combination of sodium bromide and sodium biborate, and it is seldom indeed that some degree of improvement is not obtained, at least in decreased frequency and severity of the seizures and in the patient's symptoms.

A start is made with 15 gr. sodium bromide and 7 gr. sodium biborate, together with 3 minims liquor arsenicalis, given morning and evening, and increasing to three times daily if improvement is not obtained. The addition of a few minims of liquor arsenicalis is useful in preventing a bromide rash. The prescription is really an old one and well established; its value would appear to lie chiefly in the bromide rather than in the borax, although the latter may assist. With borax alone, even in large doses, in epilepsy, I have never met with any success. If a good result is not obtained with the combination of sodium bromide and biborate, my experience has been that it is useless to persevere with bromides and that one must seek for another remedy.

In a contribution to the discussion on the Nature and Treatment of Epilepsy [1] at the B.M.A. meeting, Bradford, July, 1924, I gave the results of treatment with different remedies in a large number of cases of idopathic epilepsy, analysed in conjunction with Dr. H. C. Beccle. We found that several cases responded to luminal in a most remarkable manner. I am, however, in entire agreement with Dr. Williams-Walker that more than 3 gr. luminal per day is undesirable, and I stated in the above communication that my experience had been that if one did not obtain a satisfactory result with 1½ gr. luminal morning and evening the case was unlikely to respond to luminal at all. If a dose of 3 gr. per day be not exceeded, none of the unpleasant symptoms mentioned by Dr. Figdor and Dr. Carlill will be seen. In general, I have not found that luminal loses its effect after a few months, and have some cases that have been continuing on 3 gr. a day over a period of more than two years without experiencing an attack. In patients who do not show an adequate response to either the bromideborate or luminal, a combination of sodium bromide (10 to 15 gr.) and luminal (1½ gr.) night and morning will often produce a good result. In three cases so treated attacks had been entirely absent for over a year. Of other remedies, some cases—especially those in which the fits are nocturnal—respond to dialacetin (1½ gr. either at night or twice daily) when other drugs have failed.

I am, Sir, yours faithfully,

C. WORSTER-DROUGHT, M.D.

Cavendish-square, W., Oct. 19th, 1925.

UNUNITED FRACTURES.

To the Editor of THE LANCET.

SIR,—With some statements in Prof. E. W. Hey Groves's interesting address on this subject, published in THE LANCET of Oct. 10th, it is impossible for me to agree. Prof. Groves states that "unrestricted mobility" is one of the mechanical causes. This recalls vividly to my mind the case of a man with an unreduced dislocation of the humeral head. It was of several weeks' duration. In the attempt to reduce it the surgical neck of the humerus was fractured. As house surgeon my instructions were to apply no splints and to carry out passive movement at the site of fracture frequently and fully so as to establish a false joint. The proceedings were naturally very painful, and the result was absolute and strong union. This impressed me much, for at that time the teaching in fracture of the humerus was to immobilise the whole upper extremity, with even a shoulder-cap and a splint carried to the end of the fingers, lest non-union should result. This case was an example of the most unrestricted mobility that I have ever heard of.

The next statement made with which I do not agree is that "in the case of the shaft of the humerus the difficulty of efficient fixation is the prime cause of frequent non-union." Much depends on what is meant by "efficient fixation." In any arm it is impossible to apply splints that will in any way absolutely control the fragments from movement. That is the case in all fractures. How much more so when the arm is swollen with the effused blood. There is only one way to produce immobility and that is open operation. There is no need, however, for any operation, nor do patients want an operation if they will get equally good results without and no likelihood of non-union. Personally I am unaware of a case of non-union of the humerus where the principle of active movement has been adopted from the first. There has been only one case of delayed union to my knowledge, and that took six months to solidify. It was treated by making the patient tap her elbow frequently on a firm cushion, with the humerus straight up and down, and otherwise using it as much as she could. Such is the record for simple fractures, and in septic fractures I have not had a case either, though many came under my care with gaps and foreign bodies during the three years I was in charge of wards at the Edinburgh War Hospital, Bangour.

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[1] Brit. Med. Jour., 1924, ii., 1054.

The last statement with which I do not agree is that " The importance of mobility as a cause of non-union has been obscured by the teaching of those who advocate early movement of a limb as conducing to rapid restoration of function." If Prof. Groves had seen and followed the wonderful results obtainable by early active movement he would probably have been much less drastic in his remarks. It is close on 25 years since I adopted the method of treating fractures of the upper extremity by early active movement *short* of pain and gradually increasing the movement. No splints are employed unless some obvious gain will result. Naturally the upper extremity lends itself to this type of treatment. The lower extremity is different as it is weight-bearing in character. So profoundly have the excellent results impressed me that I consider this method of treatment a " principle " which should be taught widely. There has been only one case of non-union in my experience, and that was in a simple fracture of the clavicle. With such a record this method of treatment is certainly worthy of consideration, as not only are the results quicker but are better than by other means.

I am glad to say that my old house surgeons and many of my old pupils are at present engaged in carrying out the treatment of fractures on this principle, and so far I have not heard of any of them being disappointed.

I am, Sir, yours faithfully,

Edinburgh, Oct. 13th, 1925. J. W. Dowden.

PROPOSED MEMORIAL TO THE LATE MR. HAMILTON DRUMMOND.

To the Editor of The Lancet.

Sir,—The tragic death of Mr. Hamilton Drummond is so fresh in the minds of the medical profession that it is unnecessary to detail the circumstances of that calamity. He was so well known and so greatly beloved by those in all walks of life that it is felt that some memorial should be promoted. A committee of his colleagues on the staff of the Royal Infirmary, together with some non-medical friends, has been formed for the purpose of carrying out this object. It is proposed that the memorial should be connected with the Newcastle-upon-Tyne Infirmary and the Medical School which he served so faithfully, and in which he was so much interested. The exact form of the memorial must be decided at a later date, and will largely depend upon the amount subscribed. The committee has decided to appeal for subscriptions up to a limit of 5 guineas, but it is hoped that all who cherish his memory will subscribe irrespective of the amount.

The following is a preliminary list of subscribers for amounts totalling £395 14*s.* already received or promised :—

Mr. H. B. Angus, Dr. Arnison, Dr. Armstrong Atkinson, Mr. J. Anderson, Mr. Arkle, Dr. Allison, Dr. Adams.

Mrs. J. L. Boyd, Dr. R. A. Bolam, Dr. V. E. Badcock, Mr. A. H. Burgess, Dr. Beattie, Dr. A. Brumell, Mr. Barclay, Dr. Bishop, Mr. S. Barling, Dr. Edgar Babst.

W. T. Cochrane, Mrs. W. T. Cochrane, Mr. J. Clay, Mr. Arthur Cooke, Colonel Cookson, Dr. J. Charles, Dr. Mabel Campbell.

C. Davey, Mr. Dickie, Dr. W. Davidson.

Mr. H. Evers.

Mr. Ernest Finch.

Dr. Gamlen, H. A. Graves, Sir C. Gordon-Watson, Dr. M. Glasse, Mr. Gilmour.

Dr. W. E. Hume, Dr. Hall, Dr. Hunter, Dr. Hindmarch, Mr. Hodgson.

Mr. Irwin.

Mr. A. M. Johnston.

Miss Kirkhouse.

Sir Alexander Leith, Bart., Mr. J. W. Leech, Dr. R. P. R. Lyle, Dr. Lloyd.

E. Matheson, Mr. A. M. Martin, Dr. Muirhead, Mr. John Morley, Mr. K. W. Monsarratt, Dr. R. E. Moyes, Dr. F. Murray, Dr. S. McDonald, Dr. Mona McNaughton.

Sir George Noble, Bart., Mr. Philip Noble, G. P. Noble, H. W. Noble, P. E. Noble, Dr. Nattrass.

Dr. Ogden, Sir Thomas Oliver.

Mr. F. C. Pybus, Dr. Parkin, Dr. Patterson.

Dr. Ruxton.

T. N. Sample, Mrs. T. N. Sample, Dr. James Smith, Mr. Graham Simpson, Dr. Spence, Dr. Slade, Dr. Wilkie Smith, Dr. A. Smith, Dr. E. D. Smith, Mr. Herbert B. Speke.

J. E. Taylor, Mr. G. Grey Turner, Dr. Thompson.

H. A. Westmacott, Mrs. Westmacott, Mr. Wilson, Mr. R. J. Willan, Mr. J. D. Wardale, Mr. S. S. Whillis, Dr. Weidner, Mr. G. E. Wilkinson, Dr. F. S. Walker, Mr. A. Whitelocke, Mr. Wardill, Dr. Hedley Whyte, Dr. Welsh.

Prof. R. P. Ranken Lyle and Mr. Philip E. Noble have been appointed joint treasurers. Subscriptions may be sent to the former at 11, Osborne-terrace, or to Messrs. Lloyds Bank, Ltd., Grey-street, both in Newcastle-upon-Tyne, or to any of the following : Prof. H. B. Angus, Prof. Thomas Beattie, Sir Alexander Leith, Bart., Mr. A. M. Martin, Mr. Philip E. Noble, Sir Thomas Oliver, Mr. Herbert B. Speke.

I am, Sir, yours faithfully,

G. Grey Turner,
Oct. 16th, 1925. Convenor of Committee.

THE DANGER OF SELF INSULIN INJECTION.

To the Editor of The Lancet.

Sir,—All patients are not as apt as Prof. Pirquet's (The Lancet, Oct. 10th, p. 765). A recent case under the care of Dr. H. Batty Shaw illustrates the risk to patients of self-injection of insulin.

A. B., aged 22, had been receiving 75 units of insulin per diem for eight months. The injections were made by the patient himself at home, some into his upper arm, but most into the upper part of both thighs. According to the patient, a small lump formed at the site of injection, which in some cases discharged, leaving an ulcer. He was admitted to University College Hospital in a semi-comatose condition, with air-hunger, and the urine was found to reduce Fehling's solution. A diagnosis of diabetic coma was made, repeated injections of insulin were given (100 units in all), and rapid recovery ensued. The statement made by the patient showed that the injections were not properly performed ; some of the fluid escaped from the needle and was not introduced into the tissues. There were 15 ulcers, 12 on the right leg and 3 on the left, the largest being 4/5 × 2/5 in. The ulcers reached a certain size and then spread no further. The bases consisted of smooth granulation tissue, pink in colour ; the edges were slightly raised, but the ulcers were shallow. Round some of the ulcers there was considerable thickening, which involved the tissues beneath the skin. In certain parts of the thigh thickened subcutaneous tissue could be palpated, and these had not ulcerated. Over these thickenings some slight reddish discoloration of the skin was observed. There seemed to be no attempt on the part of the skin to grow over the ulcerating areas. The technique of the injection as performed by the patient was as follows : The needle was placed in boiling water and the site of the injection was cleaned with methylated spirit.

No doubt similar cases have occurred and others will continue to occur as the use of insulin becomes more widespread. Some better arrangement is needed to avoid the development in these cases of diabetic coma directly due to faulty technique.

I am, Sir, yours faithfully,

A. C. M. Elman, M.B., B.S. Lond.,
Late House Physician, University College Hospital,
Oct. 15th, 1925. London, W.

Dr. Henry Alfred Alford Nicholls, C.G.M., has been appointed an Unofficial Member of the Executive Council of the Presidency of Dominica.

Medical News.

UNIVERSITY OF OXFORD.—Dr. Richard Stephen Creed, of Trinity, has been elected to a Fellowship in Physiology at New College. Dr. Creed held a Millard Scholarship at Trinity, was subsequently elected to a Senior Demyship of Magdalen College, and has since had various appointments at St. Thomas's Hospital.

UNIVERSITY OF GLASGOW.—The following medical degrees were conferred on Oct. 19th by the Vice-Chancellor, Sir Donald MacAlister :—

M.D.—Grenville W. St. Clair Ramsay (with high commendation) and Alexander M. Macqueen.

M.B., Ch.B.—With honours : Janet S. F. Niven and John V. Thomson. With commendation : Gavin S. Anderson, Elias Bloch, Alexander Dale, Josiah R. Bailey, and Catherine A. Brown. Ordinary degree : William J. Aitken, James W. M. Alexander, William Allison, John Anderson, John G. Anderson, David E. Aspin, William J. C. Auld, William J. Barbour, Arthur D. Briggs, James C. Brown, Douglas N. Buchanan, James H. Burnside, Alexander M. Campbell, Jeanie G. Campbell, John Campbell, John B. Carrigan, John F. Christie, William A. S. Couper, Francis A. Coutts, Alexander W. Cuthbert, John G. Dalgleish, Thomas H. Dalrymple, Jack V. M. Davies, Jean M. Dixon, Matthew K. Dunlop, Maurice Freeman, Mary A. Frew, Sydney M. Galbraith, Annie Gartly, Elena Gill, Douglas W. Gillies, Gordon Gillies, Agnes M. Hamilton, Everard Henderson, Nettie S. Hendry, William Hope, William Hosie, Jeanie M. Howitt, David G. Hunter, Elizabeth F. Hunter, William Hutchison, James Jarvie, David Johnston, Julia P. Johnston, Robert Johnstone, Annie C. Kerr, Charles S. Kerr, James G. Kidd, Isobel C. King, Peter S. Kinloch, Andrew P. Laird, Elizabeth H. Livingston, Mary C. Livingstone, John L. Macaulay, Robert P. J. McBroom, John A. McCluskie, William J. McCulley, JamesMacDonald, James S. Macdonald, Archibald MacEwan, John F. Macfarlane, David G. D. McGregor, George T. MacGregor, Jean N. McGregor, William McIlvenna, James McIntyre, Archibald A. MacKelvie, Helena M. McKnight, Murdo H. Maclaine, Agnes F. H. McLean, William MacLean, Donald Macleod, Susan M. MacMurray, Mona H. Macnie, John S. McTavish, William Mercer, William Murray, Arthur F. Nimmo, John Parker, Margaret F. Paton, William D. Peock, Pauline Podlashuk, Elizabeth M. Rattray, Joseph Ribchester, Christopher G. Rippin, Ruth M. L. Ross, Alfred G. Shanks, Helena M. Shanks, Thomas M. Sharp, Robert K. Shearer, Jean W. Smellie, Vida J. M. Stark, Hugh Stewart, Edith K. Stocker, Frederic Syson, David Thomas, Jean G. Thomson, Hugh A. Walker, Maggie B. Walker, James B. Watson, Henrietta C. Weir, Evelyn A. Weyman, Dorothy F. M. Whiteford, Elizabeth C. Whyte, Alexander F. Wood, Thomas Young, and Tchi-waang Yun.

Janet S. F. Niven gains the Brunton Memorial Prize awarded to the most distinguished graduate in medicine of the year, and Morton A. Foulis gains the West of Scotland R.A.M.C. Memorial Prize awarded to the candidate with the highest aggregate marks in medicine, surgery, and midwifery in the Final Examinations for the degrees of M.B. and Ch.B. held during the year 1925.

UNIVERSITY OF DUBLIN, SCHOOL OF PHYSIC, TRINITY COLLEGE.—At examinations held recently the following candidates were successful :—

FINAL MEDICAL EXAMINATION.

Part I.—Solomon Behr (passed on high marks), Wilfreda D. C. T. Pigott, Wilfred F. Lane, Richard M. Moore and Gilbert M. Smith (equal), Paul M. Garry, Thomas F. M. Woods, Lenox R. S. MacFarlane, Charles L. Day, Nathaniel Burstein, David M. Carson, George M'Donald, Andrew C. C. Charles, and Joseph A. K. FitzGerald.

In completion.—Kathleen R. Byrne, Evelyn E. Connolly, and Desmond Blewitt.

DIPLOMA IN GYNÆCOLOGY AND OBSTETRICS.

Joseph Rego and Amy B. R. A. Perriton.

THE L.C.C. AND IMMUNISATION AGAINST DIPHTHERIA.—In March, 1924, the Public Health and Education Committees of the London County Council were directed to "consider and report whether or not the treatment carried out by the department of health in New York City for rendering children immune from diphtheria should be adopted in the London schools." In their consideration of the subject, the two Committees have had before them a report by the medical officer of the Council, presenting a review of the work which has been carried out in connexion with active immunisation for the control of diphtheria both at home and abroad, and it is understood that the Ministry of Health are conducting inquiries with regard to immunisation of the staffs of fever hospitals, and in connexion with maternity and child welfare work. The L.C.C. Committees have been advised that these lines of investigation should be thoroughly explored before further consideration is given to the question of immunisation of children of school age. The Committees have, therefore, reported to the Council that, in their opinion, it is not advisable at the present time that toxin-antitoxin treatment in connexion with the prevention of diphtheria should be adopted as part of the Council's scheme of medical treatment of school-children.

SOCIETY OF MEDICAL OFFICERS OF HEALTH.—The annual dinner of this Society was held on Oct. 16th at the Piccadilly Hotel, Dr. George F. Buchan, President of the Society, being in the chair. A large number of medical officers of health, several of whom had passed the chair, were present, while the guests included Sir Alfred Mond, M.P., Minister of Health in one of Mr. Lloyd George's Cabinets ; Sir H. Kingsley Wood, M.P., Parliamentary Secretary to the Ministry of Health ; Sir Walter Fletcher, Secretary of the Medical Research Council ; Sir StClair Thomson, President of the Royal Society of Medicine ; Sir Arthur Chapman, Chairman of the County Councils Association ; Sir George Newman, Chief Medical Officer to the Ministry of Health ; Sir William Leishman, Director-General, A.M.S. ; Sir Bruce Bruce-Porter ; Colonel F. E. Fremantle, M.P. ; Dr. Alfred Cox, Medical Secretary of the British Medical Association ; and Sir Squire Sprigge, Editor of THE LANCET.

The principal toast, that of "Prosperity to the Society," was proposed by Sir Kingsley Wood, who acknowledged warmly for his department the loyal coöperation of the medical officers of health during the past year. He said that he refused to give way to the new disease of "pessimitis" in respect of health progress, and reminded his hearers, giving dramatic figures for comparison, of the decline which had taken place in the national death-rate of recent years, and the great improvements in the expectation of life and in the infantile mortality-rate, amounting to a revolution in medicine. A similar story of progress could, he said, be told in connexion with the incidence of enteric fever and of tuberculosis. He concluded by alluding to the necessity of a closer linking up of the various health authorities of the country.

Dr. Buchan replied for the Society in a studiously quiet manner with a gratifying story of good work done. He pointed to the progress of public health along most lines of its numerous departments, and made the valuable suggestion that no medical man should proceed to his final degree or diploma until he had ascertained something of the pattern of public health administration at any rate in his own area. But he urged that if workers in public health were to obtain good results local authorities must take a closer interest than at present in the research work necessary to modern preventive medicine, while he enumerated the future objectives of public health endeavour in a succinct series of headings.

The toast of the Guests was proposed by Dr. W. J. Howarth in very generous mood, and was responded to by Sir Alfred Mond in a humorous reply. Protesting against the introduction of a new disease by the Parliamentary Secretary to the Ministry of Health, he said that the duties of the medical officer of health were sufficiently heavy already, comprising, as he conceived them, the equipment of an architect and builder, a land surveyor, an engineer, a medical practitioner, and a chemist, while he himself had had something to do with the new responsibilities in respect of milk. How efficiently those multifarious duties were at present discharged he considered proved by the fact that our national pattern of public health administration had been copied by all advancing civilisations, while no nation as yet had attained to the high level of the pattern. He closed by a reference to the establishment, through the generosity of the Rockefeller Foundation, of a new College of Hygiene in London. Sir Arthur Chapman and Sir StClair Thomson also replied, the latter speaking for the Royal Society of Medicine : "One of the revolutionary bodies passionately admired by Sir Kingsley Wood, a Conservative Minister, although their house at 1, Wimpole-street had not yet been raided. But the medical revolution raised by medical men did not, as one poet put it, bring red ruin and the breaking up of laws, but as another poet put it, it moved towards drinking in larger life from fuller air." Sir Kingsley Wood, he added, had so eloquently pointed out the gain to the country in health and wealth brought about by the activities of the M.O.H.'s that no doubt a grateful country and a generous Government would recognise the situation by steady increases of salary. Due acknowledgment was made of the services of Mr. G. S. Elliston, executive secretary of the Society and editor of the *Medical Officer*.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION.—On Monday, Oct. 26th, at 5.30 P.M., Dr. Marcus Paterson will give the second lecture for the Fellowship of Medicine on the Treatment of Pulmonary Tuberculosis at the Medical Society of London, 11, Chandos-street, W. All members of the medical profession are welcome. During the month of November the London Lock Hospital will hold a comprehensive course in venereal disease. At the Chelsea Hospital for Women there will be a three weeks' course in Gynæcology from Nov. 2nd to the 21st From Nov. 3rd to the 28th Dr. Porter Phillips and Dr.

Thomas Beaton will give twice weekly lecture-demonstrations on Psychological Medicine at the Bethlem Royal Hospital. There will be a course in Diseases of the Chest, Heart, and Lungs at the Victoria Park Hospital from Nov. 9th to the 21st. The Royal Waterloo Hospital will give a course in Medicine, Surgery, and Gynæcology from Nov. 23rd to Dec. 12th, embracing all the departments pertaining to diseases of women and children. A late afternoon course (4.30 to 6 o'clock) will be held at the London Temperance Hospital from Nov. 23rd to Dec. 4th for the benefit of the general practitioner. Application for copies of each syllabus and for the general programme should be made to the secretary at 1, Wimpole-street, London, W. 1.

University of Bristol: Association of Alumni (London Branch).—The annual dinner will be held on Friday, Nov. 6th, at 7.30 for 7.45, at Pagani's Restaurant, 42–48, Great Portland-street, London, W. Viscount Haldane will preside and Prof. Lloyd Morgan will be the guest of the evening. Tickets may be obtained from the hon. secretary at Holloway Sanatorium, Virginia Water.

Vienna: Post-graduate Course.—The Vienna Medical Faculty has now prepared the syllabus of its nineteenth post-graduate course on syphilology and dermatology with special reference to treatment, for native and foreign medical practitioners, which will be held from Nov. 23rd to Dec. 6th. Copies of the syllabus and further information may be obtained from the Dean, Prof. Richard Wasicky, Ring des 12 November, Universität, Vienna.

Royal College of Physicians of Ireland.—The annual meeting of the College was held on the morrow of St. Luke's Day, when the following officers were elected. President: Dr. T. H. Wilson. Censors: Drs. W. A. Winter, G. FitzGibbon, G. E. Nesbitt, R. J. Rowlette. Treasurer: Dr. H. T. Bewley. Registrar: Dr. T. P. C. Kirkpatrick. Dr. Wilson, the new President, has been a Fellow since 1898, and has been King's Professor of Midwifery in the School of Physic since 1911.

Two Vacant Chairs of Medicine.—Dr. John Mallet Purser has resigned the Chair of the Regius Professor of Physics in Dublin University, to which he was appointed in 1917 after the death of Dr. James Little. Dr. Purser had been King's Professor of the Institutes of Medicine in the School of Physic from 1874 to 1902. He has recently been in ill-health. The vacancy will be filled in December. Dr. Joseph O'Carroll has resigned the Chair of Medicine in University College, Dublin, National University of Ireland, to which he was appointed in 1912 on the death of Sir Christopher Nixon.

Welsh School of Medicine.—A special meeting of the Court of the University of Wales was held on Oct. 16th at Llandrindod Wells to consider the following resolution: "The University Court, having considered the present position of the Welsh National School of Medicine in the University, and having taken account of the correspondence between His Majesty's Privy Council, the University Council, and the Council of the University College of South Wales and Monmouthshire in regard to the position of the school, is of the opinion that, with a view to providing for the full development of the School of Medicine as a national centre for medical education and research in Wales, the best interests of the school will be served by constituting it an independent school in the University. The University Court, therefore, hereby resolves, on the recommendation of the University Council, to submit a humble petition to His Majesty in Council for a charter incorporating the school as an independent school of the University of Wales." After full discussion, in which the Principal of Cardiff College, Sir Isambard Owen, and Prof. Joseph Jones, among others, took part, the motion was put and carried by 71 votes to 41. It was agreed to refer the drafting of the scheme to the University Court in consultation with the University Council of Cardiff College.

Manchester and Salford Medical Charities.—At the annual meeting held on Oct. 15th of the Hospital Sunday Fund it was stated that the income for the year, £26,181, represented an increase of £19,000 on the previous year's figures, due principally to the inclusion in the accounts for the first time of the Alexandra Day Fund, amounting to over £3000, and to an increase of nearly £6000 in the ordinary income. Particular praise is due to the students of the University of Manchester, who have increased the yield of their "rag" on Shrove Tuesday to over £6000, being £3000 in excess of the corresponding contribution the previous year. The one disappointment was the fall of £1000 in the amount collected in the churches on Hospital Sunday, probably due to the execrable weather on that day. Amongst the various local medical institutions £23,650 was distributed, being £10,000 more than was distributed last year. In spite of this satisfactory result the committee of management are faced with a serious difficulty owing to the fact that the cost of maintaining patients from the outside districts was considerably more than the amounts contributed by these districts. During the year 40,520 cases were treated from outside districts at a cost of £103,776, while the amount contributed was only £57,605. A contribution of one penny per week by every employed person in the district would realise £50,000 in each year.

Manchester Medical School.—The annual dinner of the school will be held in the Grand Hotel, Manchester, on Thursday, Nov. 19th, Mr. C. Roberts in the chair.

Nottingham Medico-Chirurgical Society.—At the first meeting of the session on Oct. 30th Sir StClair Thomson will give an address on Dysphagia and Some Diseases of the Œsophagus. Mr. H. Bell Tawse will be in the chair.

Hospital of St. John and St. Elizabeth.—The Tetley Theatre, the Winifred Bertha de la Chare Isolation Ward, and the X ray department of this hospital, at 40, Grove End-road, London, N.W. will be formally opened on Thursday, Oct. 29th, at 3.30 p.m.

Chester Maternity Hospital.—The Marchioness of Cambridge recently opened a new maternity hospital provided by a combined effort of the Chester Benevolent Institution, founded in 1789, and the District Nurses' Association, both of which are now amalgamated with the hospital. The first baby born in the institution was presented with a silver cup.

Hospital Saving Association.—The contributors to this association now number over 180,000. From the beginning, in 1922, about £100,000 has been received, £63,000 of which has been paid to coöperating hospitals. Refunds amounting to £11,356 have been paid to contributors admitted to non-coöperating hospitals, and a further £16,000 has been refunded to contributors in respect of extra hospital benefits.

King's College Hospital Debt.—Having failed to repay completely the debt to the bank, the committee of management have decided to sell all their war loan on general account, which has appreciated in value. This will leave a debt of only about £5000 which it is hoped to clear by contributions without the necessity of selling the remaining securities, the value of which has decreased since the hospital became possessed of them.

Medico-Legal Society.—A meeting of this society will be held to-day (Friday), at 8.30 p.m., at 11, Chandos-street, Cavendish-square, W., when Dr. Nathan Raw and Mr. D. Harvey J. Hartley, the society's representatives at the International Prison Congress held in August, 1925, will present their report, which will form the basis of the subsequent discussion. Lord Justice Atkin will be in the chair.

We have received a decorative booklet on "Artificial Sunlight" from Watson and Sons (Electro-Medical), Ltd., of Parker-street, Kingsway, London, W.C. The cover and general production are intended to be in keeping with the subject and do not lack brightness. Messrs. Watson conclude that "it is impossible to cover all the exigencies of phototherapy with one type of equipment," and give an excellent account of the lamps which they supply.

Chelsea Clinical Society.—The annual dinner of this society was held in the Café Royal, Regent-street, on Oct. 20th, when over 60 members and their guests assembled. The President, Dr. Seymour Price, was in the chair. The toast of the Society was proposed by Sir Holburt J. Waring, President of the Medical Society of London, who spoke of the value of medical societies in, amongst other things, training members to take part in municipal and civic affairs. There are, he said, far too few members of the medical profession at present in the House of Commons. Dr. Seymour Price, in reply, mentioned two innovations in the society's programme which would come into effect during the winter, first that the meetings would be held in the board room and not in the smaller club room, as formerly, of St. George's Hospital, and second that two dinner meetings would take place in the Florence Restaurant, Wardour-street, in the course of the session. Mr. Ivor Back, in a speech sparkling with amusing anecdotes, proposed the Visitors, coupled with the names of Sir Holburt Waring; Dr. Howard Humphris, President of the Hunterian Society; Dr. H. W. Armstead, President of the West London Medico-Chirurgical Society; and Dr. V. Dickinson, Master of the Society of Apothecaries. Dr. Dickinson replied on behalf of the guests. The President was then proposed by Dr. K. E. Eckenstein, the treasurer of the society; Dr. Seymour Price defended himself satisfactorily, and paid a tribute to the work of the secretary, Mr. Ralph Thompson, who dutifully urged greater attendance at the society's meetings, tempering his reproof with humour.

Medical Diary.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

Monday, Oct. 26th.

ODONTOLOGY: at 8 P.M.

Presidential Address:

Mr. J. Lewin Payne: The Origin and Growth of the Odontological Society.

Paper:

Mr. A. T. Pitts and Mr. J. Howard Mummery: A Melanotic Epithelial Odontome in a Child.

Tuesday, Oct. 27th.

MEDICINE: at 5.30 P.M.

Clinical Meeting at the Middlesex Hospital, W.

Tea will be served at 5 P.M.

SOCIAL EVENING: at 8.30 P.M.

At 8.30 P.M. Fellows and their friends will be received by the President, Sir StClair Thomson.

At 9.30 P.M. the President will give a short address on Shakespeare as a Guide in the Art and Practice of Medicine.

There will be an interesting exhibition, arranged by Mr. C. J. S. Thompson, of the Wellcome Historical Medical Museum, to illustrate the subject of medicine in the Elizabethan period and the references to medicine in the plays of Shakespeare.

Wednesday, Oct. 28th.

COMPARATIVE MEDICINE: at 5 P.M.

Presidential Address by

Mr. Frederick T. G. Hobday.

Paper:

Dr. W. H. Andrews: Some Recent Advances in Our Knowledge of Plant Poisoning.

A discussion will follow, to be opened by Prof. A. J. Clark.

PSYCHIATRY: at 8.30 P.M.

Joint Meeting with the British Psychological Society (Medical Section).

Discussion on

The Early Treatment of Mental Disorders, to be opened by Sir Maurice Craig and Dr. William Brown.

Thursday, Oct. 29th.

UROLOGY: at 8.30 P.M.

Presidential Address:

Mr. R. H. Jocelyn Swan: Some Reflections upon Villous-covered Tumours of the Bladder.

MEDICAL SOCIETY OF LONDON, 11, Chandos-street, Cavendish-square, W.

Monday, Oct. 26th.—8.30 P.M., Clinical Evening: Exhibition of Cases and Skiagrams.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

THE FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W.

Monday, Oct. 26th, to Saturday, Oct. 31st.—Fellowship of Medicine lecture, Medical Society, 11, Chandos-street. Mon., 5.30, Dr. Marcus Paterson: The Treatment of Pulmonary Tuberculosis.—London School of Hygiene and Tropical Medicine, Endsleigh-gardens. Tues. and Thurs., Clinical demonstration by Dr. G. C. Low and Dr. Manson-Bahr.—Royal Northern Hospital, Holloway-road, N. Intensive Course in Medicine, Surgery, and the Special Departments.—St. John's Hospital, Leicester-square. Daily demonstrations in the Out-patient Department. Bi-weekly lectures. Tues., Dr. Barber: Immunity, Anaphylaxis. Thurs., Dr. Griffith: Principles of Treatment. General. Practical Pathological Demonstrations.—St. Peter's Hospital, Henrietta-street, W.C., Special Course in Urology. Clinical work every afternoon and lecture.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N.

Thursday, Oct. 29th.—3 P.M., Demonstration: Mr. W. E. Tanner: Selected Surgical Cases. 4.30 P.M., Lecture: Mr. H. W. Carson: The Differential Diagnosis of Conditions Simulating Appendicitis.

Daily: Clinics and demonstration in the Wards and various Out-patient Departments, Operations, &c.

UNIVERSITY COLLEGE, London.

Monday, Oct. 26th.—5 P.M., Mr. R. J. Lythgoe: The Physiology of Hearing and Vision. Fifth lecture.

Wednesday.—5 P.M., Sixth lecture.

ST. JOHN'S HOSPITAL, Leicester-square, W.C.

Tuesday, Oct. 27th.—5 P.M., Dr. H. W. Barber: Immunity. Anaphylaxis.

Thursday.—5 P.M., Dr. W. Griffith: Principles of Treatment. General.

NATIONAL HOSPITAL FOR THE PARALYSED AND EPILEPTIC, Queen-square, Bloomsbury, W.C. 1.

POST-GRADUATE COURSE: October-November, 1925.

Clinical Lectures and Demonstrations.

Monday, Oct. 26th.—2 P.M., Out-patient Clinic: Dr. Hinds Howell. 3.30 P.M., The Psychical Aura in Epilepsy: Dr. Kinnier Wilson.

Tuesday, Oct. 27th.—2 P.M., Out-patient Clinic: Dr. Walshe. 3.30 P.M., Compression Paraplegia from a Surgical Standpoint: Mr. Armour.

Thursday, Oct. 29th.—2 P.M., Out-patient Clinic: Dr. Kinnier Wilson. 3.30 P.M., Ocular Palsies: Dr. Gordon Holmes.

Friday, Oct. 30th.—2 P.M., Out-patient Clinic: Dr. Adie. 3.30 P.M., Demonstration of Swedish Remedial Exercises (in Exercise Room): Mr. Elmquist.

The fee for the Course, including Pathology Lectures, is £5 5*s*. For those who hold Perpetual Tickets the fee is £3 3*s*.

Course of Lectures and Demonstrations on the Pathology of the Nervous System.

Thursday, Oct. 29th.—12 noon, Periaxial Degeneration: Dr. J. G. Greenfield.

Course of Lectures and Demonstrations on the Anatomy and Physiology of the Nervous System.

Monday, Oct. 26th.—12 noon, The Brain Stem and Cerebellum: Dr. J. L. Birley.

Dr. H. J. MacBride will give a Course of Eight Clinical Demonstrations, chiefly on Methods of Examination of the Nervous System, in the Wards of 10 A.M. on Tuesdays and Fridays, commencing Oct. 20th. The fee for this Course will be £2 2*s*.

Mr. Armour and Mr. Sargent operate at the Hospital on Tuesday and Friday mornings at 9 A.M., or at such other times as may be announced.

Any part of the Course may be taken separately. Special arrangements will be made for those unable to take the whole Course.

Fees should be paid to the Secretary of the Hospital at the Office on entering for the Course.

J. G. Greenfield, Dean of Medical School.

MANCHESTER ROYAL INFIRMARY POST-GRADUATE COURSE.

Tuesday, Oct. 27th.—4.15 P.M., Mr. W. H. Hey: Prognosis in Abdominal Disease.

Friday.—4.15 P.M., Prof. E. D. Telford: The Diagnosis of Chronic Arthritis in Children.

ANCOATS HOSPITAL POST-GRADUATE LECTURES.

Thursday, Oct. 29th.—4.15 P.M., Mr. E. E Hughes: The Significance of Urinary Symptoms.

ROYAL INSTITUTE OF PUBLIC HEALTH, 37, Russell-square, W.C.

Wednesday, Oct. 28th.—4 P.M., Dr. J. D. Rolleston: Prevention and Arrest of Diphtheria.

PEOPLE'S LEAGUE OF HEALTH, Fyvie Hall, Regent-street Polytechnic.

Friday, Oct. 30th.—6 P.M., Prof. B. Collingwood: Sewage Systems of the Human Body.

Appointments.

Brentnall, C. P., M.B., Ch.B. Liverp., has been appointed Honorary Assistant Surgeon to the St. Mary's Hospitals, Manchester, and Honorary Assistant Gynæcological Surgeon to the Northern Hospital, Manchester.

Butt, E. S., L.D.S., School Dentist for Cheshire.

Cook, F., M.B., B.S. Lond., F.R.C.S. Eng., Surgeon to Out-patients, Chelsea Hospital for Women.

Darwent, C. T., L.R.C.P. & S. Edin., L.R.F.P.S. Glasg., Assistant Medical Officer to the Dundee Education Authority.

Menzies, F. N. Kay, M.B., Ch.B., F.R.C.P. Edin., D.P.H., Medical Officer of Health and School Medical Officer to the London County Council.

Thomas, H. A., M.B., Ch.B. Liverp., Assistant Medical Officer of Health and School Medical Officer for Denbighshire.

Royal Infirmary, Liverpool: Nuttall, H. C. W., F.R.C.S. Eng., F.R.C.S. Edin., Honorary Assistant Surgeon; Wilson, J. St.G., Ch.M., F.R.C.S. Eng., Honorary Assistant Gynæcological and Obstetrical Surgeon; Herd, S. B., M.D., Ch.B. Liverp., Additional Honorary Assistant Gynæcological and Obstetrical Surgeon.

Salford Royal Hospital: Bird, Elizabeth, M.B., Ch.B. Glasg., Radiologist; Earl, C. J. C., M.R.C.P., L.R.C.S. Irel., Medical Registrar; and Brough, A. Lothian, M.B., Ch.B. Glasg., District Medical Officer.

Vacancies.

For further information refer to the advertisement columns.

Aberdeen Royal Infirmary.—Asst. S. to Ear, Nose, and Throat Dept.

Anamallai Medical Assoc., S. India.—M.O.

Bengal and North-Western Railway Co., Ltd.—Sen. and Jun. M.O.'s. Rs.1200 and Rs.750 per mensem respectively.

Bolton County Borough.—Asst. M.O.H. and Asst. Sch. M.O. £600.

Brighton, New Sussex Hospital for Women and Children.—Hon. Radiologist.

Cardiff, Welsh National School of Medicine.—Asst. to Surg. Unit. £350.

Charing Cross Hospital Medical School.—Lectureship in Hygiene.

Chelsea Hospital for Women.—Anæsthetist. £21.

City of London Hospital for Diseases of the Heart, Victoria Park, E.—H.P. At rate of £100.

Colchester, Severalls Mental Hospital.—Second Asst. M.O. £630.

Crichton Royal Mental Hospital, Dumfries.—Clin. Pathologist. £400.

Eastbourne, Princess Alice Memorial Hospital.—Res. H.S. At rate of £175.

Essex Administration County.—Asst. Tuberc. O. £600.

Greenwich, Dreadnought Hospital.—S. in charge of Out-patients.

Grove Park Hospital, Lee, S.E.—Med. Supt. £770.

Hayward's Heath Hospital.—Hon. Ophth. S.

Hospital for Sick Children, Great Ormond-street, W.C.—Med. Reg. and Pathologist. £300.

Infectious Hospitals Service, Metropolitan Asylums Board.—Jun. Asst. M.O. £500.

Leicester Royal Infirmary.—H.S. and H.P. At rate of £125 and £120 respectively.

Liverpool Hospital for Consumption and Diseases of Chest, Mount Pleasant.—Hon. Asst. P.

Manchester City Education Committee.—Asst. Sch. M.O. £600.

Middlesex County Council.—Asst. M.O. £600.

Northampton General Hospital.—Hon. Asst. S.

North Middlesex Hospital, Edmonton, N.—Asst. S. £500.

Oxford, Warneford Mental Hospital.—Asst. M.O. £250.

Perthshire Joint Medical Service Scheme.—First Asst. M.O. £600.

Plaistow Fever Hospital, E.—Second Asst. M.O. At rate of £200.

Poplar Hospital for Accidents, East India Dock-road, E.—Second Res. Surg. O. £175.

Queen's Hospital for Children, Hackney-road, Bethnal Green, E.—Asst. S.

Royal Free Hospital, Gray's Inn-road, W.C.—H.P., First H.S., Second H.S., and Asst. Cas. O.

St. Mary's Hospital for Women and Children, Plaistow, E.—Res. M.O. and Asst. Res. M.O. At rate of £175 and £130 respectively. Also Hon. Dental S.

St. Pancras Dispensary, 39, Oakley-sq., N.W.—Res. M.O. £225.

Stoke-on-Trent, North Staffs, Royal Infirmary.—H.S. £150. Also H.P. £125.

Stourbridge, Worcestershire, Corbett Hospital.—H.S. £150.

Wakefield, City of.—Deputy M.O.H. £600.

Wallasey, Victoria Central Hospital.—Jun. H.S. £100.

Westminster Hospital, S.W.—M.O. Two Asst. M.O.'s to X Ray Dept. Also Asst. Path.

The Chief Inspector of Factories, Home Office, London, S.W., announces a vacant appointment for a Certifying Factory Surgeon at Friockheim, Forfarshire,

Births, Marriages, and Deaths.

BIRTHS.

Cossham.—On Oct. 14th, at "St. Aldwyns," Cirencester, Glos., the wife of D. G. Cossham, M.B., of a daughter.

Farmer.—On Oct. 12th, the wife of F. J. Farmer, L.D.S. R.C.S., of a son.

Welch.—On Oct. 17th, at West Norwood, the wife of Cyril H. Welch, M.D., of a daughter.

MARRIAGES.

Anderson—Wharton.—On Oct. 9th, at St. Nicholas's Church, Great Yarmouth, Archibald Stirling Kennedy Anderson, D.S.O., M.C., M.A., M.B., Ch.B., D.P.H., to Joyce, elder daughter of Mr. and Mrs. W. S. Wharton, of Great Yarmouth.

Lauder—Thompson.—On Oct. 3rd, at St. James's, Sussex-gardens, Harold Victor Robert Thomas Lauder, M.R.C.S., L.R.C.P., to Phyllis Anna Lynn, daughter of the late Alfred Lynn Thompson and Mrs. Lynn Thompson, of Westbourne-street, Hyde Park, W.

DEATHS.

Austin.—On Oct. 12th, at Fernleigh, Lingfield, Sydney Charles Austin, M.R.C.S., aged 81.

Goodale.—On Oct. 15th, at Little Bowyer, Wrotham, Kent, Henry Goodale, M.R.C.S.

Haggard.—On Oct. 18th, at St. Bartholomew's Hospital, Thomas Barker Amyand Haggard, late Capt. R.A.M.C., B.A., M.R.C.S., L.R.C.P., aged 50.

Hinde.—On Oct. 20th, at Mundesley, Eric Clark Hinde, M.B., B.S. Lond., aged 30.

Kellett.—Alfred Featherstone Kellett, M.B., B.S., B.A., St. John's College, Cambridge, Associate of Birmingham University; for 33 years practising at Lewisham, S.E., aged 59.

Orrin.—On Oct. 18th, at "Ferndale," Halstead, Essex, Beth, the wife of Herbert Charles Orrin, O.B.E., F.R.C.S., Surgeon, Ministry of Pensions Hospital, Newcastle-on-Tyne.

Pritchard.—On Oct. 16th, at St. Teresa, Chesham Bois, Bucks, Urban Pritchard, M.D., F.R.C.S., in his 81st year.

Rowland.—On Oct. 18th, at Albert-mansions, Battersea Park, John William Rowland, C.M.G., M.B., C.M.

Serpell.—On Oct. 11th, at a nursing home in Plymouth, after operation, Hugh Hamilton Serpell, M.R.C.S., L.R.C.P., late Lieut.-Colonel R.A.M.C., of Polyphant House, Lewannick, Cornwall, aged 48.

Whitsed.—On Oct. 14th, suddenly, at "Bukloh," Tilehurst, Reading, James Longland Whitsed, M.R.C.S.E., L.R.C.P., aged 74 years.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Notes, Comments, and Abstracts.

THE EQUABLE COOLING POWER OF ALPINE HEALTH RESORTS.

By Leonard Hill, M.B.Lond., F.R.S.,
DIRECTOR OF THE DEPARTMENT OF APPLIED PHYSIOLOGY, MEDICAL RESEARCH COUNCIL;
AND
Bernard Hudson, M.D. Camb., M.R.C.P. Lond.,
SWISS FEDERAL DIPLOMA; PHYSICIAN TO VICTORIA SANATORIUM, DAVOS-PLATZ, SWITZERLAND.

Among many other things of interest, the recent Climatological Congress at Davos brought out the fact that one of the chief points about the Alpine climate is the absence of high wind and the equable cooling power of the air, as measured by the kata-thermometer. Dr. Dorno, the distinguished meteorologist at Davos, has made observations illustrating the latter fact, and Dr. Paul Gotz has recently communicated to us figures which show that this equable cooling power holds good also for Arosa. On a balcony with south aspect, the average dry kata cooling power for the different months of the year varied there only 7½ to 15. In the open at Davos the variation is from 10 to 24. The Davos valley, running north to south, is peculiarly sheltered, and the perfectly straight, slender growth of the pines illustrates the fact that neither gales nor stunting winds blow there. The variation of dry kata cooling power is very great in the changeable and windy climate of Great Britain, in the open from 7 to 50 or even 60, with a monthly average varying from 21–40, but confined city courts are sheltered, and offer near the ground equable cooling power, as is shown by the anemometer and temperature records taken in a court in Camden-square, from which dry kata thermometer cooling powers of 5½ to 10 were calculated for the year. In comparison may also be cited the monthly average cooling powers calculated for Sierra Leone 7½–12, Kimberley, S.A., 13–25, and Quebec 18–63.

In the Alpine health resorts the winter sunshine and ultra-violet rays have high values in contrast to the city court-yard. The acetone blue gauge shows that the ultra-violet radiation in Kingsway is about one-third of that in clean country air. In the Alps the hours of winter sunshine equal those in summer on the south coast. Moreover, the physiological saturation deficit is higher in the Alps—that is, the difference between the weight of water vapour in the inspired air and that in the expired air which has been saturated and warmed in the lungs. The phthisical patient gets advantage not only from the sunshine and ultra-violet radiation, but also from the high evaporative power of the air acting upon the lungs and promoting the passage of blood, lymph, and secretion through the respiratory membrane. The attenuated cool air, by promoting deeper breathing, increases these effects. He also gets advantage from absence of warm, close days and cold wind and from the equable cooling power. The cooling power in the Alps is just within those limits which are felt to be fresh and pleasant, particularly when there is available a source of radiant energy such as is given by sun- and sky-shine. The patient is pleasantly cooled by the winter cooling power of the Alpine air, and his resting metabolism is kept up at a high level, his general well-being and his appetite thus being improved. The increase of resting metabolism found by one of us (L. H.) and Argyll Campbell in tuberculous patients submitted to open-air treatment has been confirmed recently by observations made by Dr. Vogel-Eysern at Davos. The patient in the Alps is never overheated whilst in the cool, shady air with high drying power, and great care must be taken that he does not become overheated in enclosed balconies or sun-boxes by direct exposure to hot sun and insufficient circulation of cooling air around him. He can get all the ultra-violet rays he needs from sky-shine and from the direct sun of the cool early morning hours. The absence of high wind prevents discomfort arising from too high a cooling power, and allows light clothing to be worn and does not make exercise difficult, for the patient is not tempted to walk too far with the wind behind him and then have to struggle back against it, arriving home in a state of fatigue, having derived harm instead of benefit from his exercise. Also, owing to the clear, dry, windless air, the patient is enabled to sit down and rest in comfort when necessary, whether in winter or in summer. These advantages, together with the beautiful and exhilarating scenery and the pageant of winter sports to watch, are offered by the Alps. We can, in our cities, make good the absence of sunshine by the use of arc lamps, a great help, but it is not possible to make good all the other things which appeal particularly to young adults.

While benefit may thus be derived by patients suffering from pulmonary tuberculosis in the Swiss Alps, it should be mentioned that only those cases should be sent who have sufficient resistance and power of response to react in the right way to the altered conditions which obtain at a height of 5000 feet or thereabouts. It is no use sending out to the mountains cases in the last stages with active spreading disease, emaciated, worn out, and with no reactive power. It is early cases and even those in later stages, if with sufficient resisting power, which make satisfactory and stable recoveries in the Alps if sufficient time is given. An average sojourn certainly should not be for less than six months, and it is better still to devote one year and even longer, with periods of change of environment when necessary, if permanent results are to be obtained. The danger of catarrhal infections during periods of change of environment must be borne in mind. The patient who returns from the Alpine open-air treatment to crowded trains and cities is susceptible to catarrhal infections against which the citizen is more or less vaccinated by frequent small doses.

KARLSBAD MEDICAL WEEK.

SEVEN years ago Karlsbad instituted an international medical week, consisting of lectures and demonstrations with special reference to the famous Czecho-Slovakian baths. The seventh of these short courses was held last month and was attended by a large medical public from many countries. Prof. Otfried Müller, of Tübingen, described the Müller-Weiss method of examining the capillaries by micro-photography. Though the capillaries are regulated and controlled by the central nervous system, they cannot be considered a "peripheral heart." Certain forms of neurosis caused irregularity in the action of these vessels, and he spoke of this phenomenon in connexion with gastric ulcer, various forms of catarrh, neurotic muscle pains, and high blood pressure in the absence of kidney disease. Dr. Alfred Gigon, of Basle, set forth the present position of our knowledge of metabolism, and described the blood changes observed after courses of Karlsbad waters. Prof. von Hösslin, of Berlin, showed that in a dying patient when the pulse and the heart sounds were imperceptible the electrocardiogram gave evidence that the heart continued to function for some considerable time. Prof. Sellheim, of Halle, dealt with the improvement of methods of blood examination in connexion with gynæcology, and emphasised the advantages of the so-called "Lüttge-Mertz-Berg organic extract serum reaction" over the Abderhalden reaction in the early diagnosis of pregnancy. A reaction is obtained with the new method within half an hour. This reaction can also be used, he claimed, to determine the sex of the fœtus. Dr. Josefson, of Stockholm, discussed the connexion between personality and the organs of internal secretion, showing that there was a possibility of moulding the personality at an early stage by adjustment of the endocrine system. Dr. Balin, of Budapest, gave an interesting lecture on auto-digestion and the formation of fatty acid in the tissues of a patient with gastric ulcer. His researches had shown that the hydrogen-ion concentration in such patients' blood was high. The administration of alkalies caused no increase of fatty acid in the urine; the tissues retain the alkali. Prof. Mühlens, of Hamburg, and Prof. R. Kraus, of Vienna, discussed recent progress in the treatment and prophylaxis of tropical diseases, with special reference to South America. It is of interest to note that "Bayer 205" is now called "Germanin." Dr. Tannhauser, of Heidelberg, discussed the relations of obesity to the endocrine organs, and classified several types of that condition. Prof. di Gaspero, of Graz, dealt with the biological functions of the skin, and the particular effects of hydro-, thermo-, and balneo-therapy on the organism, acting through the skin as a medium. The course was organised by Dr. Edgar Ganz, of Karlsbad, and proved pleasant and profitable to all who took part.

LONGEVITY OF THE LEARNED.

To the Editor of THE LANCET.

SIR,—The annotation in THE LANCET of Oct. 10th which deals with literary death-beds might at first sight lead one to suppose that men of letters during the nineteenth century were mostly short-lived. Yet there were notable exceptions to what was probably not meant to be a generalisation. Mr. Stewart Ellis, author of "Mainly Victorian," in a letter to the present writer, says amusingly: "I rather pride myself upon the closing scenes of my subjects' lives," but he draws no macabre conclusions therefrom.

Viewed as a whole, men of letters and the learned generally have often reached great ages. In his well-known book, invaluable up to its date, "Remarks on the Influence of Mental Cultivation and Mental Excitement upon Health," Dr. Amariah Brigham, of Boston, Mass., appends to his essay a table containing over 280 names of celebrities in all ages and the years of their earthly pilgrimage. Some of the centenarian records included in the list are perhaps fabulous. Thus the list is headed by Hippocrates, father of medicine, who, one tradition asserted, died at the prodigious age of 109; more modest estimates of his age are 100 and 80 respectively. Gorgias, the sophist, is said to have reached 107 years. Fontenelle, the man of universal science, was a centenarian, as also were Saadi, the Persian poet, and Herodian, the historian of the Roman emperors. Zeno, the stoic, Simonides, the poet and philosopher, and Isocrates, the orator, were said to be 98 when they died, and tradition asserts that the first named had bitten out his tongue and had spat it in the face of a tyrant many years previously. Among the nonagenarians numbers increase. They are headed traditionally by Sophocles, who was glad in his day to escape from the importunities of Eros, and they include Hobbes, of "Leviathan" fame, and Sir Christopher Wren. Octogenarian men of science or learning are numerous in Dr. Brigham's category, and among them we find Harvey, Roscoe, Kant, Arthur Young, Mead, and Buffon. Dr. Brigham collected his statistics carefully, but did not bring his record beyond 1832, the year of the first publication of his book. Hence the list would be greatly extended by including nineteenth century names such as Darwin, Wallace, Richard Owen, and a host of others. The expectation of life is, of course, far greater now than in the 'thirties of last century. "England is superior in salubrity to any other country in Europe. The average mortality throughout the whole of England and Wales has been, of late years, about 1 in 60 . . . In London the annual mortality in the middle of the last [eighteenth] century was 1 in 20." Thus wrote Dr. Brigham in 1832, and he quotes Dr. Bisset Hawkins, author of "Elements of Medical Statistics" (1829), who notes that in Geneva good mortuary tables have been preserved since 1560, and that the probability of life there during the seventeenth century was no higher than 11½ years.

Writing as an American, Brigham envies England its health and sanity. He is of opinion that men of letters shorten their lives by neglecting their digestions, but he differs from his contemporaries in attributing dyspepsia mainly to "irritation of the brain," the diagnosis made, as you recall, in the case of Frank Smedley. This irritation, thinks Brigham, is only rarely due to disease. More often it is simply the result of mental tension, which can be relieved by a proper attention to exercise and general health. He notes incidentally that American women of the easy classes are lamentably feeble owing to their sedentary habits, and he urges on the lettered of either sex the necessity for more physical activity.

Athletic exercises, undertaken for pleasure or for health reasons, were neglected in Brigham's day all over the world, and children's brains were crammed, à la Paul Dombey, at the expense of their bodies. Men of letters everywhere were, like the American women, home-staying people, and they suffered from having been often treated as mental prodigies during their early education.

I am, Sir, yours faithfully,

Oct. 12th, 1925. BIBLIOGRAPHER.

THE "EUPHOROS" SELF-ADJUSTING ARM-SLING.

To the Editor of THE LANCET.

SIR,—Far more important than the manner of supporting the arm-sling seems to me the correct way of fixing the sling itself. Very often one sees the arm fixed in the wrong way, as the illustration of the "Euphoros" self-adjusting arm-sling (THE LANCET, Oct. 10th, p. 790) shows. To secure immobility of the arm, the outward part of the sling must be put over the sound shoulder. Only then will the arm be immobilised, as a simple try will prove.

I am, Sir, yours faithfully,

E. C. VAN LEERSUM.

Nederlandsch Instituut Voor Volksvoeding,
Amsterdam, Oct. 16th, 1925.

APOPLEXY OF THE SOFT PALATE.

To the Editor of THE LANCET.

SIR,—I have recently had a case similar to those described in THE LANCET of Oct. 3rd (p. 734). In September, 1924, I saw a lady who was very much alarmed in consequence of a hæmorrhage which she thought came from the lung. Nothing to account for the bleeding could be found after careful examination of the chest; on inspecting the fauces, however, small capillary cavities could be seen, and the patient was satisfied when told the hæmorrhage proceeded from one of these which had given way. In August of this year, when in London, she had a similar attack, when she consulted Dr. F. G. Crookshank, who found the same condition existing and reassured her.

I am, Sir, yours faithfully,

Ilkley, Oct. 16th, 1925. W. R. BATES.

WE are informed that the Schering specialties (Atophan, Veramon, &c.) are now distributed by the firm of Schering, Limited, 3, Lloyd's-avenue, London, E.C. 3, to whom application for literature and samples should be made.

Cameron Lectures

Delivered at the University of Edinburgh on Oct. 19th, Oct. 20th, and Oct. 22nd, 1925,

By HARVEY CUSHING, C.B., F.R.C.S. Eng.,
PROFESSOR OF SURGERY IN HARVARD UNIVERSITY.

LECTURE II.*—THE PITUITARY GLAND AS NOW KNOWN.

> " In those creatures that have the *glandula pituitaria* large, (as in Calves, for instance) the two Carotid Arteries meeting about the *sella* of the wedge-like bone presently divide themselves into small twigs, which being interwoven . . . . make on each side a notable *plexus*, called *Rete mirabile* . . . . So that in these creatures that gland seems to be of the same use to the *Rete mirabile*, as the *glandula pinealis* is to the *plexus choroides*, viz., to separate a serous matter from the Arterial Blood. But in Man, (according to the best Anatomists) this *Rete* is wholly wanting; so that . . . . the *glandula pituitare* is of less use in him, than in other creatures that have the *Rete*."—*Thomas Gibson's "Anatomy" (1688).*

The subject before us, in view of the time-honoured association of the pituitary body and the cerebro-spinal fluid pathways, is not so far removed from that of the preceding lecture as might be supposed. But there is still so much about the gland that remains unknown we cannot afford to smile at those who once thought that it served as a strainer for the sedimented waste products of the brain which passed out by the infundibulum as pituita or slime into the nose. This Galenic conception, indeed, persisted for 15 centuries, and as late as 1631, in his " Integrum Morborum," Robert Flood explained the ætiology of coryza on the principle of the siphon action between the ventricles and the nose. Could he have known that the hypophysis is present in all vertebrates and that in the low order of amphioxus a canal lined by ciliated epithelium affords a communication between the buccal and cerebral cavities, he would have had something more than tradition with which to substantiate his beliefs.

But Schneider (he of the membrane), in his " Liber de Osse Cribriformi " (1655), denied the existence of any demonstrable communications; nor could either Willis or Richard Lower or Vieussens find any by the experimental methods at their command. And yet how could a spontaneous cerebro-spinal rhinorrhœa, of which these learned men most certainly have had knowledge, have been accounted for on any other basis? Even Magendie leaves one with the impression that the hypophysis may represent a sort of lymph gland interposed in the fluid pathway.

Truth assuredly lies at the bottom of a well; and that out of these gropings in the dark, the pituitary body, in the past decade or two, should have come to occupy a position in medicine out of all proportion to its size is the more remarkable. Of this I need not remind the members of a school whose professor of physiology not only was a pioneer contributor to our knowledge of its functions, but who has inspired many of his pupils to the making of further discoveries. Indeed, if I am not mistaken, it was he who in his admirable Lane Lectures in 1913 actually baptised the " Endocrines " of which we hear so much to-day. . . .

During the first decade of the century great confusion prevailed in regard to the disorders of the gland. To be sure, acromegaly and gigantism were recognised as clinical entities known to be associated with hypophysial tumefactions, but Pechkranz (1899), Fröhlich (1901), Axenfeld (1903), Müller (1905), Brissaud (1907), and probably a good many others, ophthalmologists and gynæcologists in particular, were calling attention to the existence of tumours of the gland or its neighbourhood associated with combinations of optic atrophy, amenorrhœa, infantilism, adiposity, and sometimes diabetes insipidus—in short, a most heterogeneous array of symptoms which had no apparent relation to acromegaly whatsoever.

The attempted reproduction of any of these mysterious syndromes by extirpation methods had been unavailing; and though physiologists had shown the existence of an active substance in the posterior lobe, it was generally believed that the organ must be vestigial, since those pioneers who had undertaken its experimental removal claimed that no symptoms whatsoever ensued. However, because of the gland's inaccessibility and small size these experiments were particularly difficult to carry out, and the results, to say the least, were undependable. Certainly, were hypophysial tumours ever to be operated upon successfully, it was necessary to know something more about the function of the gland if for no other reason than to avoid such mistakes as had been made in the process of developing the operation of thyroidectomy.

Experimental Apituitarism.—In 1907 a Roumanian investigator, Paulesco, devised a new operative approach to the canine hypophysis which enabled him to expose the gland so that it could be successfully and cleanly extirpated. The animals invariably died with a peculiar train of toxic symptoms, and he naturally concluded that the organ was essential to the maintenance of life. Here, then, out of all the vagueness of the past was something tangible, if the astonishing statement was to be believed. Dr. L. L. Reford and I in the same year undertook to repeat Paulesco's experiments and came to the same conclusions. The animals with proven total removals all died with what, in imitation of Kocher's designation for the symptoms provoked by a total thyroidectomy, we termed *cachexia hypophysiopriva*. . . . After all, the important thing to have shown is not whether the gland is actually essential to life, but that, instead of its being merely a vestigial structure of no consequence to the organism, as was claimed by Paulesco's predecessors, it is in reality an organ of extraordinary importance for the maintenance of a normal physiological equilibrium.

One would suppose, with the present-day activities of surgeons in operating upon the gland, that the clinic would by this time have provided corroboratory evidence bearing upon this matter one way or the other, just as the extirpation of the thyroid served to bring to light the essentiality of the parathyroid bodies to the maintenance of life; and though extensive operations for the removal of tumours such as the congenital lesions arising from the relics of Rathke's pouch are occasionally followed by a slow train of symptoms with fatality from inanition, I have never but once known of a clinical case in which the symptoms resembled the experimental cachexia hypophysiopriva which is so quickly fatal in animals.

This case was that of a middle-aged woman who, while in normal health, had a sudden headache which was soon followed by stupor, coma, and death in three days. The abruptness of this unexplained illness led to a detailed medico-legal examination of the body. Nothing whatever was found which could possibly account for the death but a small and unsuspected pituitary adenoma. Into this adenoma a spontaneous hæmorrhage had occurred with complete intracapsular destruction of the gland.

But to return to our laboratory studies. We naturally felt that if the train of symptoms were actually due to the removal of the gland, they could be offset by preliminary or coincidental glandular transplantation; and during the following year (1908–09), with Dr. S. J. Crowe and Dr. John Homans, an attempt was made to answer this and the many other questions which crowded in upon us. . . .

When I re-read to-day our report on the prolongation of life by transplantation of the gland after total hypophysectomy, I am less impressed with our partially successful results than I am with the many sources of confusion which beset us. We were vainly endeavouring to distinguish between the comparative importance for the maintenance of life of the epithelial *versus* the nervous portion of the gland; and in respect to the latter had been entirely misled in regard to its relation to diuresis by the studies (1901) of Schafer and Magnus—an error which at least put us in very good company. There is, however, perhaps one thing in our report which is deserving of attention to-day—namely, the appearance, in the vicinity of a transplant made into the cerebral cortex, of Herring's hyaline bodies which we regarded as evidence of activity of the posterior lobe. But this concerns a mooted question to which I shall return.

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* Lecture I. appeared in The Lancet, Oct. 24th, 1925, and Lecture III. will appear in a subsequent issue. They are slightly abridged for issue in our columns, and will be published shortly as a small volume, dedicated to a group of young collaborators.—Ed. L.

Experimental Hypopituitarism.—These things were of minor significance when compared with a far more important observation made in the course of these experiments—namely, that many animals which survived partial hypophysectomies became in time adipose, inactive, and sexually dystrophic—a train of symptoms, in other words, resembling in many respects the confusing clinical syndromes produced by tumours of the gland which failed to cause acromegalic overgrowth, but on the contrary were accompanied by an adiposo-genital dystrophy. It is a curious fact that we had long been surrounded by these fat and lethargic animals before we really "saw" them, and before the idea burst upon us that we had actually produced states of pituitary insufficiency. . . .

An array of problems was immediately exposed for attack by this disclosure. Could the symptoms, as in the case of thyroid deficiencies, be offset by feeding of extracts or by glandular transplantations? What was the active principle with which we were dealing and where did it reside; in the posterior lobe, which alone possessed an active substance so far as physiologists could tell us, or in the anterior lobe, or in both, or were there several principles? Why should these experimental hypophysectomies have produced so many striking changes in the other ductless glands? What would be the effect on growth, provided the experiments were made on puppies rather than on the adult animals selected at random for our earliest series of experiments? Some of these questions like the last were soon answered; some of them still remain unanswered, for the riddles of physiology are not so easily solved as all that.

A series of hypophysectomies in puppies was soon carried out with Dr. Emil Goetsch, giving results, so far as the retardation of growth is concerned, in entire agreement with those reported by Ascoli and Legnani (1911) and by Aschner (1912), whose admirable papers forestalled us. We, however, doubted the truth of Aschner's contention that the effects he had obtained were due to uncomplicated total removals, in view of the operative approach through the mouth which he had employed; and yet, though we still clung to the view of essentiality of the gland, we had to admit that the fatal cachexia following its total removal in puppies was much less prompt in its onset than in older animals.

But when it occurs, this state of apituitarism, as we had observed it, is unmistakable, characterised as it is by somnolence, a slowed pulse and respiration, and a subnormal body temperature which tends before the end to fall almost as low as that of the surroundings; and Dr. Goetsch observed that the hearts of some of these animals continue to beat after death much as does the heart of a batrachian. We naturally inferred that the loss of the gland leads to some profound disturbance of metabolism and heat regulation. These effects we were inclined to ascribe chiefly to deprivation of the anterior lobe, for in confirmation of Paulesco's observation we had found that the dislodgment of the infundibular lobe (pars nervosa), leaving the pars anterior intact, led to no recognisable disturbances—an observation the more surprising in view of the active principle it was known to contain. We were not then aware, of course, that the infundibular stalk, and even the tuber, contains pathways in connexion with the pars tuberalis resembling those in the body of the lobe, and also that extracts of these areas contain traces of the active principle. Even so, it is quite probable that all of this posterior lobe tissue, pars nervosa and intermedia included, could be spared, and no untoward symptoms supervene provided the anterior lobe remains intact. . . .

Let us first of all turn our attention to this seemingly unimportant posterior lobe, to its secretory product, and the manner of its discharge.

THE PARS POSTERIOR.

As later experiences taught us, we had been barking up the wrong tree in our original conjecture that it was deprivation of the anterior lobe which caused the serious alterations in physiological equilibrium in our extirpation experiments; but leaving this aside, a more important pursuit was that in connexion with the series of animals in which incomplete extirpations had been made, particularly those with stalk division which Paulesco erroneously regarded as equivalent to a total extirpation.

In the quotation used as a caption to this lecture, Gibson makes reference to the *Rete mirabile* of the older anatomists, and Dr. Heuer, Dr. Goetsch, and Dr. Dandy made studies of the circulation of the canine gland which showed that the entire supply to the anterior lobe passed down the infundibular stalk from the Willisian vessels, whereas the posterior lobe had an additional blood-supply from vessels which enter it from behind. We therefore knew that it would be possible, in the dog at least, to divide or to obstruct the pituitary stalk without subsequent necrosis, and this led to a series of experiments the consequences of which may at this juncture be discussed.

Formation and Discharge of Posterior Lobe Secretion.—In the course of their studies here in Edinburgh on the cat's hypophysis, Schafer and Herring had called attention (1908) to the faintly staining hyaline or colloidal masses in the loose tissue spaces of the pars nervosa, and suggested that these masses might represent the secretory product of the lobe. In properly fixed preparations of the canine hypophysis we found likewise that these amorphous masses, which appear to be a product of the epithelial investment of the lobe, are at times abundant, and appear to be streaming through the loose tissue spaces which obviously radiate towards the tip of the infundibulum. This had intrigued our interest from the first, and though these presumably colloidal bodies are very elusive and are easily dissolved out of the specimens, leaving the tissue spaces empty, we nevertheless, in full agreement with Herring, frequently saw the masses in the act of seeming to extrude themselves between the ependymal cells into the ventricles.

This naturally led to an effort to detect an active substance in the fluid, and though we found this a most difficult matter, capable of false interpretations and necessitating innumerable controls, Goetsch and I came to believe that posterior lobe secretion was normally discharged into the cerebral ventricles, and ere long succeeded as we thought in demonstrating its presence in the cerebro-spinal fluid, secured from the hydrocephalic ventricles of clinical cases. Doubts as to the correctness of our conclusions promptly appeared. Edinger (1911), while admitting that the spaces in the pars nervosa appear to lead brainwards, had never seen an injection mass enter the ventricle. Carlson and Martin took exception to our findings (1911), also Houssay (1918), and even in our own laboratory the subsequent studies of Dr. Conrad Jacobson, not published till ten years later, failed to corroborate them. Dr. S. C. Harvey and I returned to the matter again in 1915–16, using the plain muscle-contracting (oxytocic) test for pituitrin without results sufficiently uniform and dependable for publication, and there the matter on our part might have rested.

However, certain more successful studies controlled by the oxytocic test were at the same time being carried out in the Pharmacological Laboratory in Cambridge by Douglas Cow (1915), who showed that the active substance in the fluid, which is most variable in amount, can be increased by the intravenous injection of certain extractives, particularly of the duodenal mucosa. And since the war, independently of one another, W. E. Dixon in Cambridge (1923) and Carl Trendelenburg in Frankfurt (1924) have taken up the subject anew with results that lend support to our original views.

Like many others (Capelletti, Petit and Gerard, Meek, Dixon and Halliburton, Frazier and Peet, to mention a few of them), we became engaged at one time or another, in the course of our cerebro-spinal fluid studies, in the elusive and uncertain pursuit of substances which might increase the flow of fluid. For reasons associated with the closed-chamber factors of the Monro-Kellie doctrine, experiments of this sort offer unusual difficulties and are prone to misinterpretation. However, we felt that we had avoided the more common sources of error by measuring the fluid production as it came from the ventricles rather than from the arachnoid cisternæ; and in our Cerebro-spinal Fluid Studies No. 8, Weed and I reported (1915) that "pituitrin," presumably from its direct action on the plexus, had a particularly marked effect in producing what we called a "choroidorrhœa." As our conclusions in this respect were not confirmed by Dandy and Blackfan (1913) and were opposed also by Dixon and Halliburton (1916) we may well enough have been misled. This, however, is less important than the confirmation by Prof. Dixon and Prof. Trendelenburg of the underlying assumption that under certain circumstances the cerebro-spinal fluid actually contains demonstrable amounts of posterior-lobe secretion.

There are, however, evidences from another source which support our hypothesis and to which we may for a moment refer. In repeating Paulesco's experiments on stalk separation, we had found on subsequent histological examination that the posterior lobe had become so extraordinarily cellular and so infiltrated with hyaline masses that we naturally came to regard this appearance as an evidence of secretory stasis, although we knew of no comparable process in connexion with any other organ of the body. We had at this time also been given opportunities to study a certain number of hypophyses from clinical cases of hydrocephalus due to tumour or otherwise in which the posterior lobe had shown a similar invasion by cells from its epithelial investment. And since many of these patients, as explained in my monograph on the pituitary disorders, had shown constitutional symptoms such as lethargy, adiposity, subnormal temperature, amenorrhœa, and so on, suggesting a deficiency of pituitary secretion, we were led to believe that under these circumstances also there must be an obstruction to the normal discharge of the secretory product from the pars nervosa.

Not only did we find, in agreement with Herring, that these hyaline bodies were greatly increased in amount after thyroidectomy, but they seemed to be even more abundant after a "near total" extirpation of the pancreas, which merely goes to show how closely the endocrine organs are functionally interrelated. But the experiments, carried out with Emil Goetsch in our 1909–10 series, which gave us the most striking picture, were ones in which a silver-wire "clip" was bloodlessly closed on the hypophysial stalk after exposing the gland by the usual operative method.

During the past year with Dr. Maddock a new series of these "clip" experiments has been conducted for another purpose, to which we shall return; suffice it to say, the histological picture of extreme cellularity of the posterior lobe with increase of hyaline and the production of great masses of colloid in the inter-glandular cleft has been invariably obtained. Certainly this striking appearance can only be interpreted as the result of an obstruction to the discharge of the products of posterior-lobe activity, or at least of products which are in transit through the lobe, for some destination or other.

Histogenesis of the Pars Nervosa.—But we know lamentably little about the actual histogenesis and structure of the neuro-hypophysis. The pineal body, a far less important organ, is much better understood and has an easily demonstrable basis of neuroglia; but there are peculiar difficulties which stand in the way of comparable studies of the pars nervosa. We have recently made an effort with the specific dyes introduced by the School of Ramón y Cajal to determine just what may be the nature of the loose tissue strands which radiate through the lobe towards the infundibulum and between which the hyaline masses accumulate. They are supposed to be neuroglial, but they do not take the specific stains for glia, and certainly the cells have none of the morphological characteristics of the glia cells. Delicate nerve-fibres of uncertain destination may be seen passing down the stalk to become lost for the most part in the upper portion of the lobe. Occasional fibrillæ which take the specific glia stains are also demonstrable in the stalk running for the most part crosswise to the course of the nerve-fibres; but neither glia nor nerve-cells can be demonstrated by methods at present at our command in the body of the lobe itself. . . .

Meanwhile, certain experimental zoologists in Germany, England, and America have hit upon a most significant consequence of posterior-lobe extirpation in the amphibia. They have shown that the lobe provides a substance which controls the pigmentary responses in the skin, for after the removal of the anlage of the epithelial portion of the hypophysis from the embryo frog, for example, the tadpole not only becomes retarded in its growth, but remains pale or albinoid owing to contraction of its cutaneous pigment cells (B. M. Allen and P. E. Smith (1916)). These pale animals serve as a most delicate indicator for posterior-lobe (pars intermedia?) secretion, for on its injection in minute amounts the melanophores expand and the animal acquires the normal colour.

This melanophore reaction to posterior-lobe extracts has not as yet, so far as I am aware, been utilised as a test for the presence of this substance in the cerebro-spinal fluid. But whatever future studies may bring forth in this respect, it may suffice to say that the posterior lobe is a unique organ surrounded by an investment of indolent-appearing epithelial cells, seemingly under the direct control of non-medullated nerve-fibres, and that stimuli of one sort or another cause these cells to divide and bud off directly into the loose tissue reticulum wherein they appear to undergo some sort of amorphous transformation as they progress towards the stalk and the infundibular cavity. At this point they not only have the appearance of passing between the ependymal cells into the ventricle, but when this apparent outlet is experimentally occluded, the gland becomes packed with the transforming cells and their secretory products. . . .

Carbohydrate Tolerance.—But I must return again to our second series of hypophysectomies to pick up the threads of another pursuit conducted with Dr. Goetsch and Dr. Jacobson, which led us to investigate the carbohydrate tolerance of our experimental animals, and from this into studies of their basal metabolic rate, which in turn was indirectly responsible for the introduction of the calorimeter into the clinic.

As already stated, we had observed, in connexion with our first series of experiments (1908–09), that definite histological changes occurred in many of the other ductless glands, notably in the thyroid and gonads, as a consequence of the hypophysectomy; and vice versa, as was well known, that changes in the hypophysis occurred subsequent to thyroidectomy, castration, and so on. We naturally wondered whether the syndrome which we had ascribed to a state of hypopituitarism might not be due to these secondary changes rather than to the primary hypophysial lesion.

All this was part and parcel of a developing conception of the inter-relations of the ductless glands, so convincingly presented ere long by the work of

Eppinger, Falta, and Rudinger. We had observed, for example, that a nearly total pancreatectomy appeared to activate posterior-lobe secretion if the associated increase in the hyaline bodies of the lobe could be so interpreted; and we also found that our adipose and lethargic animals with a pituitary deficiency seemed to tolerate the loss of the major portion of the pancreas better than normal animals would have done. We had learned also that the manipulation of the hypophysis sometimes caused a transient hyperglycæmia with glycosuria; that, corroborating Borchardt (1908), the injection of pituitrin, particularly in rabbits, had a similar effect; and, of course, we were aware that acromegaly which we had come to ascribe to a state of glandular overactivity was sometimes accompanied by symptoms resembling diabetes mellitus.

But when in a series of carefully controlled experiments we came to investigate the sugar tolerance of our partially hypophysectomised animals, we were surprised to find that the temporarily lowered assimilation limit for carbohydrates ultimately became raised, and that this increased tolerance for the ingestion of sugar could only be overcome by the coincidental administration of either pituitary or thyroid extract. Since extracts of the anterior lobe had no influence in these reactions, we accordingly were led to explain the symptoms of pituitary deficiency—the adiposity, subnormal body temperature, and so on—to an impaired oxidising or metabolising capacity of the body from loss of posterior-lobe extract, with resultant transformation and storage of sugar as fat. A definite parallelism with these experiments was found to exist in clinical cases of hypopituitarism, though under these circumstances, of course, the precise extent and nature of the functional damage could only be surmised.

As was stated in our first paper (1911) on the subject:

> "If loss or diminution of the internal secretion of the pancreas robs the tissues of their power of metabolising carbohydrates, certainly loss or diminution of the secretion of the hypophysial posterior lobe greatly enhances their power in this respect."

And this naturally led us to conjecture that an injection of the active principle of the pancreatic islets would lower the amount of sugar in the blood and that the active principle of the posterior lobe would raise it—in other words, that the two substances counteract one another, which proves to be true.

Our observations in these matters led us to a reconsideration of the so-called encephalic glycosurias which naturally date from Claude Bernard. Though his celebrated sugar piqûre was well established as a physiological experiment, it had come to be appreciated in the clinic that lesions, traumatic or neoplastic, in the neighbourhood of the hypophysis were more likely to provoke glycosuria than similar lesions near the fourth ventricle, and as early as 1898 M. Loeb had postulated the existence of a sugar centre in the tuber cinereum.

We naturally turned to investigate the manner of discharge and of action of the posterior-lobe secretion in producing hyperglycæmia. In a study of the hypophysial nerve-supply by Ehrlich's intra-vital methods, W. E. Dandy had shown (1913) that sympathetic fibres radiate along with the numerous branches from the Willisian vessels towards the pituitary stalk, and we assumed, from what was known of the nervous control of the adrenal, that the glycosuric effects of these anterior piqûres might be due to a stimulation of the autonomic fibres to the gland. We accordingly undertook to determine the pathways of these impulses, and in an elaborate study conducted in the Laboratory of Surgical Research at Harvard, with L. H. Weed and Conrad Jacobson, it was found, when what we termed "available glycogen" is present in the body, that:

1. A piqûre of the hypophysis in the rabbit is comparable, in its glycosuric response, to a piqûre of Bernard's so-called sugar centre in the fourth ventricle.
2. Stimulation of the superior cervical ganglion, by faradisation or even by the manipulations necessary for its exposure, causes glycosuria in the rabbit, cat, and dog.
3. Stimulation of the superior cervical ganglion after exclusion of all possible downward impulses to the abdominal viscera by way of the vagi, cervical sympathetic trunks, or spinal cord, leads to glycosuria.
4. Stimulation of the superior cervical ganglion after separation of all synapses of the sympathetic system by administration of nicotine causes glycosuria.
5. Direct faradic stimulation of the hypophysis itself, after exposure to a transphenoidal operation, gives glycosuria even after preliminary transsection of the spinal cord and cervical sympathetic trunk.
6. If the posterior lobe of the hypophysis has previously been removed by operation the usual stimulation of the superior cervical ganglion fails to give glycosuria.
7. Direct faradic stimulation of the hypophysis provokes glycosuria even after transsection of the spinal cord above the splanchnics.
8. A classical Bernard piqûre will likewise cause glycosuria even after transsection of the spinal cord above the splanchnics.

We naturally concluded that the infundibular lobe acts under the influence of impulses which pass from Bernard's centre in the brain-stem and reach the gland by way of the cervical sympathetic, there to liberate a chemical messenger which causes glycogenolysis, hyperglycæmia, and glycosuria; and in view of what has gone before, we assumed that this hormone was discharged into the cerebro-spinal fluid pathway.

But with all this, should these findings come to be substantiated (and so far as I know they have never been repeated) they merely throw some further light on the physiology of the posterior lobe and leave us as far as ever from an answer to the pertinent question as to whether the glycosuria of acromegaly is hypophysial or pancreatic in origin.

In an attempt to answer this question Mr. Dott applied himself a year ago, while attached to the Brigham Clinic, without coming to any definite conclusions. We know that acromegalic glycosuria is associated with a hyperglycæmia, and that it reacts to insulin as does pancreatic diabetes. We also know that an acromegalic may die from diabetic coma and no histopathological changes be apparent in the islets, though this does not necessarily imply that they may not be seriously deranged from a functional standpoint. On the other hand, as was first pointed out by J. H. Burn,[1] pituitrin will counteract the effect of insulin, an observation our early studies would fully confirm; and latterly R. C. Moehlig and H. B. Ainslee[2] have shown that the hypoglycæmic convulsions in rabbits produced by insulin may be checked by posterior-lobe extract, which causes a rise in the blood-sugar. Moreover, we know that acromegalic diabetes is capable of spontaneous recovery. . . .

Before leaving this general discussion of the posterior lobe and its manifold activities, there is still another subject which deserves discussion, for it has led to discordant views. It concerns the much-mooted question of the hypophysial polyurias.

Diabetes Insipidus.—Is this disorder primarily neurogenic or primarily hypophysial in origin? This question has divided students of the subject into two opposing camps. Indeed, as may be recalled, a similar discussion once raged in regard to Graves's disease which some still attribute to a neurogenic disorder in which the thyroid plays merely a secondary rôle.[3]

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[1] Journal of Physiology, June, 1923, lvii., 318.

[2] Jour. Amer. Med. Assoc., May, 1925, lxxxiv., 1398.

[3] In this connexion should be recalled Cannon's ingenious experiments on cats in which the phrenic nerve and the cervical sympathetic were anastomosed low on one side of the neck. By this procedure the rhythmic efferent impulses associated with respiration passed along the sympathetic, presumably to the thyroid, and provoked a most curious state with excitability, rapid pulse, increased metabolism, and so on, which was interpreted as an evidence of experimental hyperthyroidism. Dr. Gilbert Horrax in 1914, at my suggestion, repeated these experiments, and, as a control, removed the thyroid lobe on the side of the anastomosis. His results (unpublished) were the same as those obtained by Cannon. We naturally claimed that our friend the hypophysis was more concerned than Cannon's friend the thyroid. There the matter rests.

It must have occurred coincidently to many of those who were interested in the subject of diabetes insipidus that the supposed renal sources of the disease would have to be abandoned. For our own part, the early experimental hypophysectomies, with their resultant polyuria, had led us definitely to associate this symptom with a functional derangement of the gland, and this view was supported by certain clinical observations in which patients with bitemporal hemianopsia and primary optic atrophy, unmistakably due to tumour in the region of the hypophysis, had at the same time persistent polyuria of high degree. We have seen that non-myelinated nerve-fibres pass down the infundibular stalk, and it is perhaps natural that the hypothalamus (tuber cinereum) whence they may originate should be a favourite place for the predication of centres such as the sugar centre of Loeb, of which we have already made mention. Erdheim, I believe, was among the first to suggest that an injury of these centres was responsible for these polyurias, rather than that they were due to an actual pituitary derangement; in other words, that they were of nervous rather than glandular origin. He had arrived at this conclusion, I assume, during the course of his well-known studies of the congenital cysts of the infundibular region rather than from the actual identification of any centres by physiological experiments. However this may be, the view doubtless influenced other Viennese investigators, among them Aschner, who explained the polyurias following his experimental hypophysectomies on the same basis, just as did Narbut the diminished oxygen consumption shown by these same animals. . . .

Personally, I find myself in discord with these views both on experimental and clinical grounds; on a pure neurogenic basis it is difficult to explain why the supposedly hypothalamic polyuria should be promptly checked by the administration of posterior-lobe extract. After all, it is perhaps an academic question whether an injury to adjacent nerve-centres whose very proximity is enough to suggest that they preside over the activities of the gland, or whether damage of the gland itself by injury or disease is the actual cause of a given syndrome.

But the whole subject of the non-diabetic polyurias has from the first been in a tangle of inconsistencies, and indeed it was not until 1912 that studies such as those by E. Frank in Minowski's laboratory served to point strongly towards their hypophysial rather than renal origin. The chief source of confusion lay in the fact that diuresis provoked by posterior-lobe extracts is but a transient effect, and it was not until the acute physiological experiments on which this opinion was based were checked by long-enduring observations that the extract was found to have precisely the reverse effect—namely, to provoke an oliguria rather than a polyuria. The experiments of Ketil Motzfeldt carried out in the Harvard Laboratory (1917) were among the first to make clear that pituitrin actually has antidiuretic properties, and thus to explain the apparent disharmony of the physiologists and clinicians; for it had been clinically observed by both Farini and Von den Velden (1913) that the extract given hypodermically, contrary to expectation, would actually inhibit the polyuria of diabetes insipidus.

This was a disclosure which justifies all the time and thought which many have given to the subject of these polyurias, for it has put into our hands what Andrew Cameron was after—namely, a practical therapeutic treatment for the amelioration of a most distressing disease. Still, we are no nearer an actual explanation of diabetes insipidus, for if the disorder is due to an injury of some centre in the tuber cinereum, it is remarkable that it is so rarely an accompaniment of the craniopharyngeal-pouch tumours which compress and deform not only the tuber where the centres supposedly lie but the hypophysis itself.

It was for the purpose of reconsidering the interpretations which Bailey and Bremer had put upon their experiments, and in the hope of reconciling our conflicting views on the subject, that Dr. Maddock and I this past winter have made a control series of experiments in which, as stated, we have reverted to the method employed in our earlier studies of placing a silver "clip" on the hypophysial stalk. By the aid of Weed's brain-shrinking method these operations are conducted more easily to-day than they formerly were, and the "clip" can be closed on the stalk of the dangling canine gland quite bloodlessly and without any appreciable or histologically demonstrable injury of any adjacent structures. When this procedure is carried out, precisely the same train of symptoms is evoked that Bailey and Bremer describe—viz., a prolonged polyuria with subsequent tendency to adiposity.

Probably, therefore, the effects are the same whether produced by: (1) an injury to the hypothalamic centres; (2) a "block" of the nervous impulses with obstruction of the secretory products in the posterior lobe; or (3) a partial hypophysectomy with actual removal of the lobe. In other words, a break in the mechanism of posterior-lobe secretion from nerve-centre to gland produced by any agency tends to upset the normal water balance and to cause an hypophysial polyuria; and, conversely, the administration of pituitrin serves to check the experimental polyuria thus produced wherever the break in the mechanism may have occurred.

This explanation at least harmonises the differences which lay between my own preconception in this matter and the views of my pupils. But it will not, I fear, quite satisfy those who, like J. J. Abel, if I understand him correctly, believe that the responses are entirely by chemical messengers and that the direct nervous influences may be wholly disregarded.

The antidiuretic property we have been discussing is but one of many which extracts of the posterior lobe possess, and some of which are already utilised for practical therapeutic purposes. The attention of the pharmacologist has tardily become focused on a study of the biochemical nature of the substance or substances responsible for these various reactions. Some have postulated the existence of three or four separate hormones. Others, like Prof. Abel, believe that there is only one specific hormone which alone, as appears to be the case with his tartrate, is capable of evoking all the known responses, cardiovascular, antidiuretic, oxytocic, respiratory, and melanophore-expanding.

THE PARS ANTERIOR.

In what has gone before overmuch has perhaps been said in regard to the physiology of the pars nervosa, and we may now turn to the epithelial lobe, where there are fewer functional straws at which to grasp, though there are many reasons for ascribing to this portion of the gland the premier rôle among the endocrines—if, with all said and done, we are entitled to consider separately the function of the two or three anatomical subdivisions of the gland. However this may be, the customary physiological weapons of attack are unavailing in the case of the pars anterior and we must have recourse to roundabout ways if we would spy into its secrets. The fact that we are not all in agreement as to whether the various cellular elements, chromophile and chromophobe, comprising this highly vascularised lobe represent different stages of activity of a single cell type or are cells of quite different function, shows the present great limitations of our knowledge. As Abel has said in regard to the posterior lobe hormone, there are Unitarians and Trinitarians among us.

Metabolism Observations.—In considering the relation of the posterior lobe to the utilisation of sugars, the question was discussed whether the glycosuria of pituitary disease should properly be regarded as an hypophysial or a pancreatic effect. A similar question is naturally raised in regard to the alterations which the clinical cases show in their metabolic rate. Are they primarily hypophysial or secondarily thyroid in origin? To this subject we may now turn for a moment. . . . . .

While we were engaged in our studies of carbohydrate tolerance in 1908–10, I knew nothing about metabolism estimations, hardly knew, indeed, what the term with its modern implications signified. We had observed in the clinic that outspoken states of hypopituitarism, in addition to the adiposity and sexual dystrophy which they showed, were accompanied by periods of profound and long-enduring somnolence, by a slowed pulse and respiration, by a subnormal body temperature, and by an apparent insensitivity to external stimuli—states comparable to those of our experimentally hypophysectomised animals. Certainly these individuals were burning their tissues at a low fire, and it was perhaps not unnatural that the clinical syndrome should have suggested resemblances to what we vaguely knew as the state of hibernation. Since the experimental extirpation of no other ductless gland except the hypophysis, so far as we knew, caused this particular train of symptoms, Dr. Goetsch and I were led to make some studies in this direction, and we found, as others had found before us, that in the hibernating state the ductless glands, notably the hypophysis and gonads, appear to be in a resting stage, whereas at the period of awakening they become markedly hypertrophied; but aside from these simple histological studies which served to disclose these facts, we found ourselves dealing with a subject of unanticipated difficulties which was intertwined with chemico-metabolic problems beyond our reach.

A more important lead came from another direction, for Dr. John Homans, after his year in the Hunterian Laboratory, enlisted the interest of Francis Benedict in the subject of our dyspituitary dogs, whereupon Dr. Benedict devised a respiration calorimeter for determining the carbon-dioxide production of small animals. With the aid of this apparatus, as described in their detailed report (1912) from the Carnegie Nutrition Laboratory, they observed, among the other general effects of a partial hypophysectomy in puppies heretofore discussed, that in the course of time there was a marked post-operative fall of the total metabolism as measured by the carbon-dioxide production per kg. of body-weight per hour, a fall which was the more striking owing to the amount of inert body fat the animals gradually acquired. . . .

It may suffice to say after this lapse of a dozen years that the hypopituitary cases show, as did Homans's animals, a lowered rate, whereas the metabolism in the active stages of acromegaly is raised, though never to so high a percentage as may be seen in hyperthyroidism. The extremes which have been observed are −39 for the former and +65 for the latter.

But this does not answer the question at hand—Is the increased rate in acromegaly due to a secondary thyroid hyperplasia rather than to some influence on metabolism possessed by the hypophysis itself? We, of course, are all aware that acromegaly has notable polyglandular manifestations, and I believe the view is held in the Mayo Clinic, where Dr. Boothby and Miss Sandiford have gone, that the increased metabolic rate shown by these cases is a secondary phenomenon; for it has been observed that removal of the enlarged thyroid of an acromegalic lowers the rate. But even this does not settle the point. The only proof could come from a lowering of metabolism by the partial removal of an hypophysial adenoma leaving the enlarged thyroid untouched; and an example of such an effect has been cited in a recent study of the pituitary adenomas by Dr. Bailey and Mr. Dott. . . .

Hypophysial Relation to the Glands of Sex.—Among the most definite consequences of hypopituitarism, whether produced by experimental procedures, by glandular tumours, even by hydrocephalus, so frequent a source of interference with the gland's activity, are the secondary effects on the gonads to which attention has often been called. Infants fail to acquire normal sexual adolescence; adults lose their sexual desires and potency; amenorrhœa in women is one of the first tell-tales of disturbed function.

It is difficult to tell whether these symptoms and the histological changes which accompany them are ascribable to the anterior or posterior lobe or to the combined action of both, but reversible effects show at least that the anterior lobe is an important element. Erdheim and Stumme, for example, first clearly showed (1909) the remarkable alteration in the cells of the anterior lobe associated with the amenorrhœa of pregnancy. The secondary enlargement of the hypophysis in eunuchs had been noted before this by Fischera (1905) and by Tandler and Gross (1905); and it is stated that in castrated hens the gland almost doubles in size. Indeed, the hen's plumage acquires male characteristics just as in certain clinical endocrine disorders we may see a suggestive reversion of the female to the male type and vice versa. All told, modern experiments on the gonads and sex physiology read like a story from the Arabian Nights.

Naturally, while we have been waiting for the biochemist to isolate the active principle or principles of the gland, efforts have been made both in man and animals to see what would be the effect of prolonged feeding of pituitary substance and of glandular transplantations. The attempts have been innumerable, and the results, so far as growth is concerned, quite negative, though Prof. Schafer was led to believe that "the addition of a small amount of pituitary substance to the food appears to favour the growth of young animals." . . .

In 1913–14 Dr. Goetsch took this matter up anew. In a time-consuming and most carefully controlled study of a series of young rats of known pedigree and growth curve he found that the daily oral administration of bovine anterior lobe extract during the preadolescent period had a remarkably stimulating effect upon the development of the reproductive glands of both sexes, shown not only by their early sexual maturity and their precocity in raising families, but by demonstrable histological evidences of precocious ovulation and spermatogenesis. . . .

The Hypophysis and Growth.—The experimental zoologists have turned their attention to the relation of the pars anterior to growth, and P. E. Smith (1917) showed that the retarded development of hypophysectomised tadpoles could be accelerated if they were fed upon certain residues of the anterior lobe. But the most convincing experiments yet conducted have been those of Herbert M. Evans (1922–5). Dubious of the effects to be expected from the oral administration of pituitary extracts in the higher animals, Evans gave to a series of rats daily intraperitoneal injections of the emulsion of fresh bovine gland, and succeeded in producing such marked overgrowth as to justify him in designating the condition as one of actual gigantism. Thus the assumption that the overgrowth of clinical acromegaly and gigantism is an expression of hyperpituitarism receives its first really striking experimental proof. . . .

Encouraged, as others doubtless have been, by Dr. Evans's remarkable results, we have undertaken on our own account some further studies in regard to growth. Dr. Leo Davidoff, who has for the past two years been concentrating his attention on our series of acromegalics, undertook to see, by using Evans's methods, whether in animals, which had presumably attained their full stature, acromegalic characteristics might not be observed. But this proves to be a most difficult quest; and since preparations such as Evans employed are not tolerated by larger animals such as rabbits, cats, and dogs, when given intraperitoneally, we cast about to find some standard pharmaceutical preparation which at least might appear to possess traces of an active anterior lobe principle.

One of these preparations was found to have a prompt effect in checking the œstral cycle in female rats, and though this in the light of Goetsch's experiments would seem contradictory, it at least showed the presence of an active substance of some sort. Accordingly, a series of rats was subjected to prolonged intraperitoneal injections with results which suggested, at least, that the preparation contains the growth principle as well. The experiments, indeed, taken in conjunction with P. E. Smith's experiences on hypophysectomised tadpoles, were regarded as sufficiently encouraging to justify an attempt in the clinic to stimulate growth in one of our little patients whose stature for the two years following a successful removal of a Rathke's pouch cyst had remained unchanged.

These children are peculiarly coöperative and intelligent patients, and this particular child submitted, with his parents' consent, to receiving an intraperitoneal injection of 5 c.cm. of this substance every second day for a period of over two months. We had hoped that the effect of the substance, were it actually present, would be more marked in a case of pituitary infantilism than in a normally developing individual; but no effect whatsoever was observed. We evidently have much more to learn about these extracts before we can adopt them to clinical use, and the many apparent contradictions had far better first be untangled, so far as possible, in the laboratory where observations can be controlled. . . .

SURGICAL CONSIDERATIONS.

The Tumours.—As emphasised in many places, had it not been for the tumour and its local pressure effects the surgeon would hardly have come to meddle with the questions which up to this point have been under consideration. Having been drawn in, because there were mechanical difficulties to overcome, it was inevitable that he should take something more than a mechanical interest in the subject. So it was with the thyroid. Certain goitres by displacing and flattening the trachea caused a mechanical dyspnœa which could only be relieved by some surgical procedure. Kocher and the Reverdins first had the temerity to undertake operations under these desperate circumstances, and it is common knowledge that clues for solving some of the thyroid and parathyroid puzzles were thereby supplied.

But the thyroid goitre offered a simple problem compared to that of the hypophysial goitre. One was exposed to view for the layman to diagnose; the other was concealed and affected not only the eyes of its victim, but obscured the vision of the professional observer as well. Consequently those who now have on their hands the responsibility of tardily developing the operative treatment of hypophysial disorders may comfort themselves by the recollection that those who have relayed to their successors the surgery of the thyroid adenoma had a 20-year head start, and our problem is a far more complicated and difficult one. We meanwhile have profited greatly by their experiences; have more or less followed in their footsteps and avoided some of the pitfalls they had pointed out.

I have already touched on the fact that one or two of the earliest operations on the hypophysis were in cases of acromegaly, and that those who had undertaken them were led to believe that there had been a definite amelioration of the constitutional as well as of the local symptoms. But these were precocious steps taken in imitation of partial thyroidectomy for Graves's disease, and as we now understand the matter they were steps taken out of turn. For even to-day one may as well admit that the treatment of pituitary tumours consists of little more than the prevention or relief of the local pressure-effects of pituitary or parapituitary tumours. True, this is a great boon, and the neuro-surgeon now shares with ophthalmic surgeons the thrills and satisfactions of restoring vision to persons on the verge of blindness.

But in his desire to share in this satisfaction, the surgeon may get into infinite trouble unless he has some knowledge of just what he is after. I recall the remark made by a companion while watching a small dog bounding across the fields in pursuit of a railroad train: "I wonder what he'll do with it when he catches it." So it behoves us to be thoroughly aware of the nature of the various tumours of the hypophysial neighbourhood, and there are perhaps three main groups: the suprasellar meningiomas and craniopharyngeal pouch tumours which, in addition to their local pressure effects, may evoke typical hypopituitary syndromes, and, thirdly, the hypophysial adenomas proper, some of which give the reverse clinical picture. Without a definite understanding of the precise situation, behaviour, and manner of growth of these several lesions, it would be foolhardy to attack them; and the surgeon consequently must know his morbid anatomy no less well than his physiology of the gland.

We, of course, are indebted to the pathologist for our primary conception of these several lesions, but by the time they have come under his observation it is inconceivable that they could ever have had any surgical bearings. The fairly common suprasellar meningioma, which takes its origin from the arachnoidal cell-nests as described in the preceding lecture, may slowly in the course of years attain the size of a fist before it causes death; and yet these lesions when small are not only capable of being diagnosed, but can be exposed and totally removed with preservation of vision in spite of their awkward position between hypophysis and chiasm.

The Congenital Cysts.—And the same is true of the more common craniopharyngeal pouch cysts first clearly described by Erdheim in 1904, though there is very little in the literature concerning the surgical treatment for these remarkable congenital lesions. They usually, though not invariably, begin to manifest their presence in preadolescent life both by local signs of tumour as well as by their pressure-effects on the hypophysis as a whole. Hence in these little patients one may see in most outspoken form the combined syndrome of anterior-lobe disturbance (sexual and skeletal infantilism) and of posterior-lobe disturbance (adiposity, a high sugar tolerance, a low metabolism and sometimes diabetes insipidus).

These lesions, moreover, are usually suprasellar and need not in any way deform the sellar outlines as shown by the X ray. But there is a tell-tale of their presence which to-day is demonstrable in fully 80 per cent. of the cases owing to the refinements of roentgenological technique which the invention of the Potter-Bucky diaphragm has made possible. This concerns the deposits of lime salts which occur in connexion with the keratinised epithelial lining of the cysts. The diagnosis, however, is not quite so easy as all this, for sometimes the congenital tumour does not ride so high, but may actually develop within the capsule and distend the sella precisely as does the more common adenoma. . . .

With the congenital cysts, however, the difficulty is not so much in the diagnosis as in knowing how to deal with the cyst when it is exposed. The mere evacuation of its contents gives only temporary relief since there is an early refilling. Extirpation is necessary, and this is difficult because of the relation of the tumour to the optic nerves. These cases, of course, are operated upon from above by an osteoplastic approach; different surgeons advocate different procedures, but personally I prefer to come down upon the lesion from in front rather than from the side.

Though I do not intend to bore you with descriptions of operations, it may be said that the chiasm, in justification of its name, represents the crux of the matter. Though some of the cysts have sufficiently thin and tough walls so that after evacuation they may be drawn out from between the distorted optic nerves practically intact, more often the calcareous and keratinised part of the wall is so adherent and extensive as to make this impossible. I have never quite had the courage to take what may be the proper step under these circumstances—namely, to split the chiasm fore and aft, thereby committing the patient to a permanent bitemporal hemianopsia, but at the same time giving free access to the mesially placed tumour which at times may assume astonishing proportions. We have seen such a cyst as large as a tennis ball, its walls a solid mass of calcification.

After all, a permanent bitemporal hemianopsia is preferable to the recurrence of symptoms so apt to take place. Only one anatomical structure stands in the way of such an operation—the anterior communicating artery which lies stretched out across the elevated surface of the chiasm, but this vessel, as I have found, can be easily "clipped" and divided. Thomas Willis would be interested to know that a portion of his circle, from which the spokes of the *Rete mirabile* of his predecessors pass to the hypophysis has actually come, after all these years, to be an important factor in a surgical operation.

The Adenomas.—These present quite a different surgical problem from the congenital cysts, and, strictly speaking, should be the main object of our discourse, for they are by far the more common lesion, and primarily rather than secondarily affect pituitary function. They have so recently been made the subject of a detailed report by Mr. Dott and Dr. Bailey that it is hardly necessary to say more. Dr. Bailey has come to believe from a histopathological review of the adenomatous tissues in our collection that he can identify a "mixed type" of adenoma. This differs from the chromophile adenoma of acromegaly and the chromophobe adenoma characterising hypopituitarism, in that a peripheral rim of eosinophilic granules still persists about the cell; and he and Mr. Dott feel confident that this particular type of adenoma serves to explain those mixed clinical syndromes in which traces of acromegaly are seen commingled with the clinical evidences of hypopituitarism.

It is our custom and preference to approach these glandular tumours by a method called transsphenoidal. A small incision is made under the lip; the mucous membrane is separated on each side so that the operative approach is by way of the nose but does not actually enter the nasal cavities. A speculum is inserted, the anterior wall of the sphenoidal cells removed, the thin bulging floor of the sella chipped away, the dural encasement incised, and such an amount of the gland as is thought sufficient to relieve pressure is then spooned or sucked away. It sounds simple, and in a favourable case may be so. What is more, the convalescence is usually rapid and uneventful with rapidly widening fields of vision.

One would suppose that these operations, which necessarily open the enveloping arachnoidea of the gland, would be attended by great risk of meningitis. As a matter of fact they are not, and the mortality of the series taken as a whole, including the early operations, which were foolishly done on patients often in extremis due to a then poorly understood intracranial extension of the growth, is now approximately 7 per cent.[4] However, in the last 50 successive transphenoidal operations there has been only one fatality, which brings the operative mortality of the more recent years well within bounds—namely, at 2 per cent. But what is of more importance is the fact that in about 70 per cent. of all these cases there has been a vast improvement of vision. This, of course, is the proof of the pudding.

In the days when we first began to study these cases in the surgical wards at the Johns Hopkins, the perimeter was a dusty instrument on a shelf rarely used except for demonstration either in the neurological or ophthalmological clinics. To-day we could not get on without it, and the perfected technique of taking the field peripheries which was elaborated by Clifford Walker during the years he was a member of my staff continues to be employed, so far as they are capable of it, by my successive neurosurgical residents. And a neurosurgical group has scarcely less need of the ophthalmoscope and the calorimeter and other instruments of precision. Nor should the microscope be forgotten, for the histopathology of these lesions is no less important to him for diagnosis and prognosis. Subdivisions of responsibility in the routine handling of large groups of patients is probably necessary—diagnostic tests by a series of special people, an operation by another set, the pathological report by still another. But any such system, when progress is to be made in a new field, is unworkable.

I was once told by Prof. Kocher, who I suppose had his experiences with the thyroid in mind, that no satisfactions in medicine were so great as those which came from concentration upon and the mastery of a small subject, and that this necessitated an approach from all aspects, diagnostic, experimental, pathological, and therapeutic, not the least important part of which at one time or another in the history of the subject was likely to be surgical.

It will be given to few to play such an important part in the history of any subject as that which he played in the case of the thyroid disorders. The best that people of lesser intellects and industry than he possessed can do is to come as near to this goal as their abilities permit. But the surgery of the hypophysis at the present time, as I am sure he felt about the surgery of the thyroid in his early days, is practically in the "stone age" of its development. The time will come, ere long perhaps, when the biochemist will have shown us how to cure most of the common functional adenomas of both of these glands without surgery. Prevention will then come in its turn to supplant even these eagerly sought medicinal cures, and this will represent the "golden age" of the subject which not even the youngest of us here are likely to see.

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[4] Out of 219 cases of pituitary adenoma, 214 have been operated upon. The transphenoidal route has been used in 203 cases with 15 fatalities, giving a mortality of 7·38 per cent. The transfrontal route has been used in 35 cases with two fatalities, giving a mortality of 5·7 per cent. The total operative mortality for the entire series is therefore 7·1 per cent.

Remarks

ON THE

PHYSIOLOGY OF MUSCULAR ACTION.

Presidential Address given before the Section of Orthopædics, Royal Society of Medicine,

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It is not long since a well-known surgeon said that surgery was anatomy, pathology, and common sense, while, as for orthopædic surgery, it was nothing but anatomy and common sense. This is a common misconception of orthopædic surgery as a sort of mechanical craft, although the proceedings of this Section alone would convince anyone of the wealth of pathological material with which we have to deal. But orthopædic surgery is more than that. The ultimate aim of orthopædic treatment is *restoration of function*, and those who profess to deal with disorders of bodily function must have some knowledge of the normal functions of the body, that is physiology.

Ten years ago Sherrington remarked that "the publications of zoologists and clinicians do not commonly meet quickly." It is rather humiliating to discover that some cherished belief, some generally accepted theory, and perhaps the treatment based upon it, is about 20 years behind the known facts of physiology. So I thought that I might use this occasion to direct your attention to some bearings of physiology on orthopædic surgery rather with a view to stimulating thought and discussion than with any idea of presenting new facts. And, as so much of our work is concerned with the action of muscles, and time is short, I will confine my remarks to this important part of the subject—the activities of muscle.

Some years ago I drew attention to the significance of Sherrington's work on the postural activity of muscle—work which has not only thrown new light on the nature of posture and the disorders of posture, but has compelled us to revise entirely our ideas concerning the action of muscles generally.

TWO KINDS OF MUSCULAR ACTIVITY.

It is now known that the skeletal muscles exhibit two kinds of activity. The one is phasic—quick and transient and concerned with the execution of movement; the other is tonic—relatively slow and prolonged and concerned with the maintenance of posture. These two kinds of muscular activity are physiologically quite distinct. They differ in their effects, in their metabolism, in their nervous mechanisms, and recently it has been said that they are anatomically separate. But of this I shall have more to say presently.

Muscle is a specialised substance which has the property of altering its shape in response to a nervous impulse. This alteration in shape, which gives rise to movement, is due to a change of surface tension brought about by electro-chemical means upon the surface of the muscle-fibres. It should be noted that a muscle-fibre undergoes no change in volume; it merely becomes more spherical or less spherical, as the case may be. Both contraction and relaxation of muscle are thus active processes. The change is accompanied by a great expenditure of chemical energy, by the production of heat, and by the consumption of oxygen and output of CO_2. If unduly prolonged or frequently repeated, this kind of activity becomes rapidly fatigued, and the muscle becomes incapable of further action until it has rested.

Except that smooth or unstriated muscle has a certain power of automatic action, the only natural stimulus of muscle is a nervous impulse. The response to a single nervous impulse is a single twitch. Voluntary contraction is a tetanus—that is, a summation of twitches brought about by a rapid succession of impulses down the nerve-fibre at the rate of about 50 per second.

It was shown by Keith Lucas that the propagated disturbance in a nerve-fibre is always of the same intensity, regardless of the strength of the stimulus. It follows, therefore, that the nervous impulses which reach muscle-fibres are always of the same strength. It is now known, too, that muscle contracts on the "all or none" principle—that is, if it contracts at all it contracts for all it is worth. This used to be thought to be a peculiarity of heart muscle, but it is now known to be true of all muscle.

There are, therefore, no degrees of contraction in normal muscle-fibres; there is no such thing as a strong contraction or a weak contraction, apart from the size of the muscle-fibres concerned. The absolute strength of a muscle is determined by the size and the number of its muscle-fibres. The different degrees of response that may be obtained on stimulation of a motor nerve are due to the number of nerve-fibres, and therefore the number of muscle-fibres, excited by different stimuli. A strong stimulus excites many or all of the nerve-fibres and therefore brings into action many or all of the corresponding muscle-fibres, and the result is a strong contraction of the muscle; while a weak stimulus excites few nerve-fibres and brings into action few muscle-fibres, and we get a weak contraction.

For a given muscle, therefore, the strength of a contraction is the direct expression of the number of nervous impulses sent into it. Much of what is commonly spoken of as muscular weakness has nothing whatever to do with the muscles, but is entirely a question of nervous energy. I would add here that we speak loosely—perhaps conveniently—of the education or re-education of muscles. But, of course, you can no more educate a muscle than you can educate a liver or a bone. The only thing that you can educate is a reflex—that vital process which occurs exclusively in connexion with the terminations of a nerve-cell. It is not sufficiently recognised that the basis of so-called remedial gymnastics and re-education is neurology.

The muscles on one aspect of a joint are sometimes called the antagonists of those on the opposite aspect. This is an unfortunate choice of a word to express a mere anatomical fact. Muscles do not oppose one another, they coöperate. When movement takes place, the contraction of one group of muscles is accompanied by reciprocal elongation of the opposite group, and the nervous impulses which cause the latter to relax are the direct outcome of those which make the former contract. Even when muscles on both sides of a joint contract simultaneously, as in the fixing of a posture, this is not antagonism, but a concerted action. Paralysis of reciprocal innervation gives rise to a grave functional disorder, which we call spastic paralysis. This, if you like, may be called antagonism.

Now, speaking still of movement in muscle-fibres, it is well known that the nature of the response differs in different kinds of muscle. Thus the typical twitch in striated or skeletal muscle is a sudden quick contraction which rapidly reaches its maximum and almost as rapidly falls away; while the contraction of smooth or unstriated muscle is relatively slow and prolonged, presenting a gradual rise and a still more gradual fall. What is the difference? Both kinds of fibre are subjected to a similar change of surface tension; why does one respond quickly and the other slowly?

I introduce this question here because, as we shall see, it has an important bearing upon another question which has become prominent recently—namely, the question of the dual structure of muscle. Note that we are now considering the phenomenon of movement in two different kinds of muscle-fibre. It seems that the different rates of response to stimulation of striated and unstriated muscle respectively can only be due to the fact that one kind of fibre offers more, and the other less, resistance to the force which brings about its change of shape. In other words, it is a question of the internal resistance or viscosity of the cell substance. Now, viscosity is a physical property which can be made to change, and it is significant that in certain circumstances, for example, in veratrin poisoning and in the condition known as decerebrate rigidity, the contraction of striated muscle approximates in character to that of unstriated muscle.

POSTURAL ACTIVITY OF MUSCLE.

The postural activity of muscle is concerned, not with the execution of movement, but with the prevention of movement—that is, the posturally acting muscle develops within it a state of tension or resistance to a force which is trying to stretch it without itself necessarily undergoing any outward change.

The most remarkable features of this activity are: (1) The "lengthening" and "shortening" reactions by which the muscle adapts itself to different lengths while maintaining the same tension. It was this property which led Sherrington to apply the term "plastic tonus" to postural activity. (2) The fact that it entails hardly any appreciable increase of metabolism, so that it can be maintained almost indefinitely without exhibiting any signs of fatigue.

Now, this state of tension or resistance might be brought about by a change of surface tension of the muscle-fibres, similar to that which produces movement—by an isometric contraction of the muscle, in fact—and this actually is the means by which resistance is offered to a force greater than that which is developed in ordinary postures. But, as we have seen, this phasic activity of muscle is accompanied by a great expenditure of energy and by the rapid onset of fatigue, so that it cannot be maintained for long. On the other hand, the postural activity of muscle is maintained with hardly any perceptible increase of metabolism, and it is almost incapable of fatigue.

Clearly we are dealing here with quite a different mechanism. It has been likened to a ratchet or catch mechanism by which a state of tension may be maintained indefinitely without the expenditure of any energy. In the living cell such a condition can be attributed only to some change in the physical characters of the cell substance.

The viscosity of cell substance is known to vary significantly at different times in the life of the cell, and Bayliss showed that visible changes in viscosity may be brought about by disturbances such as are called stimuli. It is known that colloidal solutions in certain circumstances have the property of setting or clotting—like the setting of a solution of gelatin on cooling—and that they then offer a resistance to deforming forces many times greater than they could while in the fluid state. This is a physical reaction and reversible, and it has been suggested that the postural activity of muscle is a similar reaction controlled by its special nervous mechanism. So that in the language of physical chemistry the postural activity of muscle consists of a change from sol to gel, and herein lies the explanation of a state of tension or resistance developed without preceptible increase of metabolism and maintained without fatigue.

From the physiological point of view there appears to be no reason why these two functions, movement and posture—the one a change of surface tension and the other a change in the molecular arrangement of the cell substance—should be performed by different structures, by different parts of the muscle-fibres, as originally suggested by Bottazzi, or by actually different muscle-fibres, as recently claimed by Hunter. Indeed, in view of the close coördination that exists between movement and posture in higher animals, an anatomical separation would appear to be a positive disadvantage. Such a primitive arrangement obtains in some invertebrates in whom these functions are of the simplest order. But, in vertebrates, so far as can be made out, movement and posture are different reactions of the same muscle-fibres. Indeed, the more closely the question is studied, the more it appears that postural activity is but a further degree of that viscosity or internal resistance which we have seen is a variable quality in muscle-fibres performing movements.

THE QUESTION OF SYMPATHETIC INNERVATION.

It is necessary, therefore, to examine somewhat critically the evidence recently put forward by Hunter and Royle in support of their contention that the functions of movement and posture are performed by entirely different sets of muscle-fibres, the movement fibres being supplied by the ordinary spinal nerves and the postural fibres by the sympathetic. An excellent review of the whole question by Walshe has just appeared in the last number of *Medical Science, Abstracts and Reviews*,[1] so I shall be very brief.

It has long been known that the skeletal muscles receive accessory, non-medullated, or sympathetic nerve-fibres in addition to the ordinary spinal nerves. These consist of fine fibres connected on the one hand with the perivascular sympathetic nerve plexuses and ending in the muscle-fibres independently of the motor end-plates.

The presence of these fibres seems to have caused some surprise, and there has been much speculation as to the functions which they could possibly serve. But there are two points which I have not found mentioned in any of these discussions. First, are not all functioning tissues supplied by the sympathetic? Function is accompanied by an increased blood-supply which is ensured by reflex vaso-dilatation through the sympathetic. Second, in warm-blooded animals the skeletal muscles are the chief source of heat. Heat is conserved by muscular activity and peripheral vaso-constriction, while heat loss is promoted by muscular relaxation, peripheral vaso-dilatation, and sweating. These are nicely coördinated sympathetic reactions, and it is therefore not surprising to find that sympathetic nerve-fibres go to the skeletal muscles. It should also be noted that it is phasic, not tonic, muscular contraction that gives rise to heat.

Hunter's work started from the observation of Kulchitsky that "the medullated and non-medullated fibres never end in the same muscle-fibre." This is at best a negative observation and contrary to the findings of Boeke, Agduhr, and others. In fact, Hunter himself said that the question must be decided on the experimental evidence.

EXPERIMENTAL AND CLINICAL EVIDENCE.

For a criticism of the experimental and clinical evidence in detail I shall refer you to Walshe's excellent paper.[1] Here I shall content myself with quoting his main conclusion that the experiments and the clinical cases are not conclusive, and the descriptions thereof contain details not explicable on any theory of sympathetic function. Others working on the same lines have failed to obtain results approaching those claimed by Hunter and Royle. In short, it may be said that the whole weight of evidence—histological, experimental, and clinical—is against the hypothesis of a specific innervation of the tonic or postural activity of skeletal muscle by the sympathetic; against the separation of muscular tone into two elements—"contractile" tone and plastic tone; and against the conception of a dual structure of muscle.

To this I will briefly add my own small experience on the clinical side. I have done the operation of sympathetic ramisectomy ten times, lumbar ramisectomy nine times, and cervical ramisectomy once. All but one were typical cases of spastic paralysis exhibiting the plastic tonus described by Sherrington. The odd case was one of paraplegia in flexion with pronounced flexor spasms, and it is interesting to note that the result, such as it was, of the operation in this case was at least as well marked as in any other case that I have seen. In four cases no appreciable effect on the muscular condition was noted after operation. In six there appeared to be a definite, though slight, diminution of the muscular spasm. It has seemed to me to be about comparable to the amount of relaxation that might be expected from the accompanying vaso-dilatation. In no case have I been able to persuade myself that it was of real benefit to the patient.

This experience seems to be similar to that of all others who have tried the operation of sympathetic ramisectomy in this country and in America. Similar results were also obtained in the two cases chosen by Hunter and Royle out of a series of 25 cases specially selected for the purpose, and operated upon by Royle in Boston in October, 1924. It therefore seems unlikely that this operation will survive long as a method of treating spastic paralysis, and I would reaffirm my belief that for the treatment of uncomplicated spastic contracture Stöffel's operation on the peripheral nerves remains the best method hitherto devised. Physiologically it is the nearest approach we can get to the natural means of regulating the strength of a muscular contraction.

A PROPRIOCEPTIVE REFLEX EVOKED BY STRETCHING.

Sherrington has shown that the tonic or postural activity of muscle is a proprioceptive reflex arising in the muscle itself. Further, Liddell and Sherrington have shown that the adequate stimulus for this reflex is stretching of the muscle. Thus, the tendency of the lower limbs to bend under the body-weight evokes a stretch reflex or tonic action of the extensor muscles, which persists as long as the stretching force is acting. This, then, is the mechanism by which the upright position of the body generally is maintained. Normally, postural activity is found only in the antigravity muscles—that is, those which constantly resist and counteract the action of gravity. The centre for this reflex is in the mid-brain, and it is known to be controlled and influenced by the labyrinths, the cerebellum, and the cerebral cortex.

I have dealt elsewhere [2] with the bearing of these facts upon the ætiology of postural deformities. Here I will only remind you that postural deformities are due to default of the normal postural activity of the muscles, and their treatment comprises: (1) correction of the deformity, if possible; and (2) re-education of the postural reflex.

For these purposes remedial exercises or gymnastics are extensively employed, consisting almost entirely of movements performed in various ways. And, in view of what has already been said, we may ask ourselves this question: If movement and posture are two entirely different mechanisms, what is the good of performing movements in order to educate posture? Experience proves that it is some good. Movement and posture, though distinct, are nevertheless closely associated. Postures are changed by movements, and change of posture is the adequate stimulus for postural activity. The important point is that it is not the movement per se, but the fixing of the postures attained by movement that constitutes the real exercise.

There is too much arm-and-leg wagging in the schemes of most gymnasts. Conventional Swedish exercises are based upon the erroneous idea that postural deformities are due to weak muscles, and it is sought to strengthen these muscles by making them perform repeated movements. An interesting experiment has been made in applying the technique of certain forms of dancing—so-called operatic dancing—to the re-education of posture. It is interesting because not only does it provide for most patients an attraction which is wholly wanting in ordinary remedial exercises, but the essence of this form of dancing is the posing or fixing of postures as distinct from the movements employed to attain them. A recasting of remedial exercises on these lines is long overdue.

MOVEMENT AND POSTURAL ACTIVITY.

But it is a mistake to think of posture as merely a state of immobility. Movement and postural activity are closely associated in many, if not most, of the ordinary actions of muscles. It has been shown that the simple stretch or myotatic reflex—as Sherrington calls it—consists of two parts: a short-lasting relatively intense phasic reaction, and a less powerful longer-lasting tonic reaction. So that, for instance, when weight is suddenly thrown upon a partly bent limb there is a brief powerful phasic contraction of the extensors to take up the sudden strain, and a prolonged tonic reaction to maintain the posture, or, in other words, to prevent the limb from bending. Thus at every step in walking and running and in many other movements a postural reaction is evoked which fixes the part, if only for a moment, in the position to which it has been brought.

Students are taught that the action of a muscle is the effect of approximating its origin and insertion. Thus, for example, the student learns that the action of the quadriceps is to extend the knee-joint. It is nothing of the sort. It is true that the quadriceps does extend the knee, but that is a very small part of its action. The great function of the quadriceps is to prevent the knee from bending. It is one of the great postural muscles of the lower extremity, and as its action is of considerable interest and importance to orthopædic surgeons it may well be taken as a type.

The functions of standing, walking, and running are essentially reflex in character. Of course, they are influenced in various ways by voluntary action; but essentially they are reflex. The postural reflex activity of the quadriceps is essential for all these functions. Failing this, the individual may be able to control the knee for a time by an extraordinary voluntary effort. But voluntary effort cannot be continued indefinitely, and when it fails, the muscle lets the knee down. This is the familiar condition of quadriceps insufficiency so common after injuries and diseases of the knee-joint, and it is noteworthy that powerful voluntary extension of the knee may be possible in cases of marked quadriceps insufficiency.

WHAT IS REFLEX ATROPHY?

In every serious injury or disease of the knee-joint rapid wasting of the quadriceps is one of the first signs to appear and the last to disappear. As we are now taking the quadriceps as a type, these remarks apply equally to many other regions of the body. So far as I know, no adequate explanation of this muscular atrophy has ever been suggested. It is much more than a mere disuse atrophy. It is obviously some active process. It has been called reflex atrophy; but what is reflex atrophy? There is no evidence of any specific trophic innervation of muscles.

I would suggest that there are two physiological factors responsible for this type of atrophy. One, a reflex inhibition of the postural or tonic activity of the muscle, about which there is no doubt whatever, and the other, a reflex excitation of the phasic activity of the same muscle, or, in other words, an attempt at reflex protective spasm.

Now, postural activity alone is able to maintain a state of tension for long periods with hardly any increase of metabolism, as in maintaining ordinary postures. With the help of postural activity a mild phasic activity also can be maintained very economically, as in the condition of decerebrate rigidity. But without the support of postural action prolonged phasic activity is a most extravagant form of energy and it leads to a rapid using up of the materials from which the energy is derived.

Some years ago Langley[3] suggested that the atrophy of paralysis following nerve injuries was due, not to disuse, but on the contrary to excessive activity of the muscle brought about by the traumatic excitation of the nerve. He did not mention the tonic or postural activity of the muscle, but, as this is abolished in peripheral nerve injuries, the same explanation may be applied also to this case.

TREATMENT MUST INCLUDE ADEQUATE STIMULUS.

It is worth while perhaps to consider for a moment the means which are commonly employed in treating quadriceps insufficiency, apart from the treatment of any underlying cause. The means are: (1) massage, (2) electrical stimulation, and (3) exercises consisting almost invariably of movements of extension of the knee. Each of these methods is capable of developing a wasted muscle, but not one of them is an adequate stimulus for the postural activity of muscle. Sherrington remarked upon the difficulty of producing anything approaching postural activity by artificial means, such as electrical stimulation. However, by what I regard as for the most part a fortunate accident, the mere development of a muscle makes it better able to regain its postural activity by taking natural exercise. But we have all met with cases of quadriceps insufficiency which have responded to treatment up to a certain point and then have ceased to improve. It is well then to remember that the adequate stimulus to the postural reflex is stretching of the muscle, provided, of course, that the muscle is able to resist it, and cases of quadriceps insufficiency will often show an astonishing improvement as soon as they are put on adequate resistance exercises.

It is instructive to put beside this the well-known clinical fact that stretching of a muscle, when it fails to evoke the corresponding reflex, as in a paralysed muscle, is a most injurious factor.

Sometimes, when the quadriceps muscle is paralysed, the operation of transplanting the hamstrings or some of them into the patella is performed with the idea that the transplanted muscles shall take the place of, and function as, the paralysed one. This operation is as physiologically unsound as it is generally useless. Such cases are often shown holding the knee extended or walking at surgical meetings. But the condition is at best one of complete quadriceps insufficiency. Postural activity is not normally found in the flexors of the joint, and no one has ever yet succeeded in imposing a postural reflex on a muscle transplanted from the flexor group. Therefore, when the patient forgets his knee and ceases to walk with voluntary effort, as he must do sooner or later, the muscles let him down. A similar objection applies also to some other tendon transplantation operations, especially in the lower extremity. For example, the peronei cannot be made to take on the postural action of the tibial muscles, nor can the tibials be made to take part in the stepping reflex which is normal to the peronei.

In contrast to these are some tendon transplantation operations in the upper extremity, notably that for musculo-spiral paralysis. Here the muscles are concerned with voluntary movements of precision, and the true substitution of one muscle for another is frequently possible.

There are many other questions concerned with muscular activity that one would like to hear discussed. The influence of muscular activity on bone growth; the significance of postural deficiency in rickets; the nature of organic contracture of muscle. What is cramp? Is not chronic constipation a symptom, rather than a cause, of postural deficiency? And if you think that here I have overstepped the bounds of orthopædic surgery, let me remind you (1) that there are many people who think that intestinal stasis plays an important rôle in orthopædic conditions, such as chronic arthritis; (2) that Sherrington has shown that the postural activity by which the muscular walls of the intestines and other hollow viscera adapt themselves to changes in the volume of their contents is precisely similar to the postural activity of the skeletal muscles by which the upright position of the body generally is maintained; and (3) that Arbuthnot Lane has said that he was led to his views on chronic constipation by his observations on scoliosis. Now, scoliosis is a subject about which orthopædic surgeons, rightly or wrongly, think they know something, and surely, if it is permissible to argue from scoliosis to constipation, an orthopædic surgeon may be allowed to hold an opinion.

The New Surgery.

In these rather scattered remarks I have tried to indicate what I believe to be the most distinctive feature of orthopædic surgery to-day. A change is coming over surgery. The old surgery, by long tradition based exclusively upon anatomy and pathology, is passing away, and its place is being taken by a surgery which takes into account also the functions of the living body. In other words, mechanical surgery—mere technique—is not everything, and physiology is coming into its own.

In this respect orthopædic surgery undoubtedly leads the way, and it is already far ahead of any other branch of surgery. This is the explanation of the long treatment—often miscalled after-treatment—which is so unpopular with the surgeon who looks for quick returns, but which is so essential a part of orthopædic methods. This also is the reason why fractures must be treated by orthopædic methods—whether by orthopædic surgeons or others. For a fracture is not only a broken bone, but a grave disturbance of function, and we know to our cost—or should I say, to our profit?—that the mere mending of a fracture in good position is not necessarily followed by perfect restoration of function.

The physiology of muscular action, with which I have dealt so imperfectly here, is but one instance of the fundamental relationship between physiology and orthopædic surgery.

References.—1. Medical Science, Abstracts and Reviews, vol. xii., No. 6, p. 437; see also vol. x., No. 6, p. 484. 2. Brit. Med. Jour., April 23rd and 30th, 1921. 3. Ibid., Aug. 14th, 1920.

Norfolk and Norwich Eye Infirmary.—This institution, which was founded in 1822, has now been amalgamated with the Norfolk and Norwich Hospital. The rearrangement provides for the maintenance of the Eye Infirmary as a separate entity administered by a committee appointed by the board of management of the hospital, and until the new premises which it is hoped to obtain are available the work will be carried on in the present building.

ON THE NATURE OF URINARY PROTEIN,

WITH SPECIAL REFERENCE TO CASES OF ECLAMPSIA.

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Owing to the very large number of hypotheses advanced concerning the ætiology of eclampsia, Zweifel some years ago aptly described it as "the disease of theories," and although, since then, as will be found in reviews of the subject in *Medical Science* (1921) and also by Hammett (1924) and by Bailey (1924), much work has been done and many suggestions offered to elucidate this perplexing condition, the ætiology of eclampsia still remains an unsolved problem.

Although cases of eclampsia have been described without any protein being detected in the urine, proteinuria is almost a constant finding, and is frequently very pronounced. The protein in such cases has usually been regarded as a mixture of serum albumin and serum globulin, with perhaps proteoses in addition, but definite proof of this seems lacking, and the experiments described in the present communication throw doubt on the statement.

About three years ago, in the course of an examination of the urine from a typical case of eclampsia, the author determined the optical activity of the urine and found it considerably less lævorotatory than was expected considering the protein content of the specimen. As search for the presence in measurable amount of other optically active compounds proved negative, and as removal of the protein yielded an inactive filtrate, the matter was more carefully investigated, as is detailed in the experimental part which follows.

Experimental Methods.

The experimental methods employed were identical in every case.

The urine was collected under a layer of toluene in glass-stoppered bottles, and as large a volume of urine as was available, usually about half a litre, was employed, but in Cases No. 1 and No. 3 as much as two litres were worked up, while the smallest quantity utilised was 270 c.cm. in Case No. 26. After separating any excess of toluene, the reaction of the specimen was adjusted, by the addition of sodium carbonate or acetic acid as the case required, till practically neutral to litmus paper, and the urine then filtered through a folded paper. As a rule, no difficulty was experienced in obtaining a perfectly bright clear filtrate, though a number of cases were encountered which gave turbid solutions. As this turbidity, being due to bacteria, was found to persist at the later stages, thus rendering polarimetric observations not only difficult but unreliable, all such cases were discarded.

The globulin and albumin present in the clear filtered urine were then fractionally precipitated by means of sodium sulphate at 40° C. As the protein content of the final solutions was calculated from nitrogen estimation by Kjeldahl's process, sodium sulphate was preferred as a precipitant to the more convenient ammonium salt, and the pure anhydrous sodium sulphate was used so as to avoid the large increase in volume which occurs with the crystalline salt. As Howe (1921) has shown that all the globulins are thrown out of solution when the sodium sulphate reaches a concentration of 21·5 per cent., sufficient of the finely powdered anhydrous salt was added to the urine to bring the concentration to approximately 22 per cent., and the mixture left in an incubator at 40° C. for some hours. The precipitated globulin was removed by filtration while warm, and the filtrate then saturated at 40° C. with anhydrous sodium sulphate to obtain the albumin. As the globulin fraction in practically every case represented only a small proportion of the total protein, attention was directed to the albumin fraction. The crude albumin, obtained as just described, was dissolved in cold water, the solution filtered, and the globulin and albumin fractionally precipitated with sodium sulphate at 40° C. as before. This process was repeated several times, usually six or seven, and as a rule after the fourth precipitation no globulin was present. The final precipitate of pure albumin (that is, free from globulin) was redissolved in water, and the solution dialysed until free from sulphate. The protein content of the resulting solution was then estimated and its optical activity determined.

The protein from two litres of urine from a case of typical eclampsia (see No. 1 in Table II.) was isolated, and the albumin separated from the globulin as described above. After dialysis against running tap-water for six days, then for two days against large volumes of distilled water, the solution of albumin was quite clear, only slightly brownish in colour, and free from sulphate as indicated by the absence of the ring test with barium chloride. The rotation of the solution was then determined, using a Hilger polarimeter with tripartite field, by which readings accurate to 0·01° are obtained. The mean of 12 readings for α in a 1-decimetre tube was −0·22°, and as the protein content by Kjeldahl's method (mean of four determinations, which all agreed closely) was 0·5806 per cent., hence the specific rotation of the albumin present in the urine was −37·89°.

Owing to the small amount of material available no attempt was made to obtain the albumin in the crystalline state, but the experiment was repeated with another quantity of urine from the same case, and a similar result was obtained—the value for the specific rotation of the albumin present in the urinary protein being −39·48°. As the preliminary examination of the urine and these two carefully conducted experiments with purified albumin clearly indicated the presence of an albumin with a lævo-rotation considerably less than the published values for serum albumin (see Table IV.), it was decided to determine the optical power of the albumin excreted in all the available cases of albuminuria in pregnancy, where the amount of protein was of a sufficiently high order.

TABLE I.—CASES DIAGNOSED AS "ALBUMINURIA OF PREGNANCY."

Case No.	Age in yrs.	No. of preg-nancy.	Month of preg-nancy.	Condition of patient.	Mam-mary gland.	Child.	Urine.	% protein.	$[\alpha]_D$ of protein.
									Degrees.
5	18	1	9	Œdema of feet and legs; B.P. 150/110.	—	Alive, slightly premature.	Catheter specimen; hyaline and granular casts.	1·27	−59·3
11	22	1	6	Considerable œdema.	—	Dead, premature.	Slight deposit of urates; no casts detected.	0·78	52·07
15	23	1	9	Nothing abnormal except proteinuria.	A.	Alive, mature.	Catheter specimen; turbid due to bacteria.	0·808 2·66	49·5 48·9
18	23	1	—	Marked œdema generally.	I.A.	Dead, mature.	Very dark-coloured urine.	0·274	65·7
21	24	1	9	—	A.	Alive, mature.	Catheter specimen; bacteria numerous.	0·31	51·02
25	26	1	9	—	—	Discharged from hospital undelivered.	Some R.B.C. and polymorphs.	0·166	54·2
27	19	1	9	Œdema of legs; eyelids puffy.	—		Urates and a few polymorphs.	0·265	49·05
30	—	1	8	—	—		Leucocytes and a few R.B.C.	0·226	53·21
31	—	—	8	—	—		Leucocytes; granular casts; a few uric acid crystals.	0·15	60·0
38	—	—	—	—	—	—	Numerous R.B.C. and acetone bodies present.	0·357	56·09
41	—	1	—	Had one fit after delivery.	—	—	Numerous hyaline and granular casts.	0·14	64·28
42	25	1	9	—	V.A.	Twins, alive and mature.	Brown colour; trace of bile pigment.	0·85	62·31

Experimental Results.

Twenty-six cases have now been examined in the manner just indicated. Twelve of these were diagnosed by the clinician in charge as albuminuria of pregnancy, and are tabulated in Table I., while 14 were described as of the eclamptic type and are tabulated in Table II.

In the cases of albuminuria of pregnancy (without convulsions), the specific rotation of the urinary albumin excreted ranged from −48·9° to −65·7°, with a mean value of −55·81°. Inspection of the cases in Table II. at once reveals the fact that the cases diagnosed as "eclampsia" are sharply divided into two groups, which for convenience may be referred to as the "low" and the "high" optical group respectively. In the "low" group, consisting of eight cases, the specific rotation of the urinary albumin ranged from −33·92° to −41·61°, with a mean value of −38·5°, while in the "high" group of six cases, the specific rotation varied from −49·4° to −58·67°, with a mean value of −56·37°. The possible significance of these values will be dealt with later.

The same method of examination of the urinary albumin was applied to five cases of proteinuria not accompanied by pregnancy. These are tabulated below in Table III. and include two typical cases of chronic nephritis and three of functional or orthostatic albuminuria—two of the latter being girls of about 12 years of age and the third a youth of 16 years. The value of the specific rotation of the albumin excreted by the kidney in these cases varied only slightly—namely, from −52·23° to −57·55°, with a mean value of −54·27°.

Optical Rotatory Power of Human Serum Albumin.

An experiment was then carried out to determine the optical rotatory power of human serum albumin, which had been subjected to identically the same treatment as the urinary albumin. For this purpose, Dr. X volunteered to provide the necessary blood, and 100 c.cm. was removed by vein puncture in the usual manner. After standing overnight, fully 50 c.cm. of clear serum were removed from the clot by means of a pipette and then centrifuged. The globulin present was then separated by the addition of the necessary amount of sodium sulphate following the same method as already described for the urine. Thereafter, the albumin was isolated from the globulin-free filtrate by saturation with sodium sulphate at 40° C. The precipitated serum albumin was removed by filtration, redissolved in water, and the process repeated four times. A portion of the solution of albumin then resulting was filtered through a No. 2 Chamberland candle and the optical activity and nitrogen content of the clear yellow-brown solution determined. From the Kjeldahl estimations, the protein content of the solution was calculated to be 1·285 per cent., and α in a 2 decimetre tube was −1·36°, so that the specific rotation of the serum albumin equalled −52·92°.

The remainder of the albumin solution was dialysed until free from sulphate. The resulting solution had a protein content of 5·121 per cent., and gave in a 1-decimetre tube $\alpha = -2{\cdot}79°$, so that $[\alpha]_D = -54{\cdot}47°$. The protein in solution was then precipitated by the addition of five volumes of alcohol, centrifuged, washed twice with alcohol and then with ether, and afterwards dried in a vacuum desiccator over calcium chloride. Approximately 1 per cent. solutions of the human serum albumin obtained as just described gave the undernoted rotations in the solvents indicated in Table IV.

TABLE II.—CASES DIAGNOSED AS "ECLAMPSIA."

Case No.	Age in yrs.	No. of pregnancy.	Month of pregnancy.	Condition of patient.	Convulsions.	Mammary gland.	Child.	Urine.	% protein.	$[\alpha]_D$ of protein. Degrees.
1	26	1	7	Face puffy; no œdema of ankles; had severe headache before convulsions started. Uninterrupted recovery.	10 fits; patient quite unconscious after the third fit.	I.A.	Dead, premature.	Considerable albuminuria with hyaline and granular casts. Chloride excretion low. Only a trace of protein 9 days after delivery.	0·5806 0·5825	−37·89 39·48
2	24	1	9	Patient became blind (temporarily).	No fits.	I.A.	Alive, mature.	Moderate albuminuria; only a trace of protein 2 days later.	0·748 0·4917	40·11 39·65
8	—	—	—	—	Post-eclamptic.	—	—	—	0·57	39·54
13	27	1	9	B.P. increased to 158 in spite of treatment. Mental condition abnormal for about 10 days after eclamptic seizure. A week later patient discharged quite recovered.	First fit 1 hour after delivery; had 22 fits.	I.A.	Alive, mature.	Catheter specimen; marked albuminuria. Deposit of urates.	1·06	33·92 34·97
22	35	3	7½	Œdema of feet and ankles; sudden amaurosis, severe headache and vomiting before fits began. B.P. rose from 140 to over 200 and continued high until delivery 3 weeks later. Discharged well a fortnight after birth.	3 fits; patient comatose afterwards.	I.A.	Dead, premature.	Granular and hyaline casts; considerable albuminuria. Trace of protein in urine 3 months later.	0·4567 0·9716 0·482	35·02 38·1 37·35
32	37	1	7½	Swelling of face and legs. B.P. 170 to 200. 2 fits. Labour induced. After labour urine output increased and œdema gradually disappeared. Discharged 11 days after labour, with no albumin.	1 fit before admission and 1 fit after admission, which lasted a minute.	I.A.	Alive, premature.	Triple phosphate crystals present. Numerous hyaline and granular casts. Acetone bodies present. Only very slight trace of protein a month later.	1·72 1·65 1·826	39·57 41·21 41·61
34	37	—	—	Œdema of ankles for 3 weeks. Headache and dimness of vision. B.P. 145/100. Severe headache before convulsions. Patient died 2 hours after delivery (hæmorrhage, toxæmia, and shock).	6 fits (antepartum).	I.A.	Alive, mature (died 2 hours after).	Urine had a very marked red-green fluorescence. Marked albuminuria with many R.B.C. and hyaline and granular and epithelial casts. Acetone bodies present.	1·65 1·397 0·6225	39·39 37·03 38·58
40	21	1	9	Patient admitted to hospital in comatose condition. Face cyanosed. Typical eclamptic convulsions. Mentally unstable for 3 weeks. B.P. 135–140 after delivery. Patient well nourished (instrumental delivery).	11 fits before delivery, 25 after.	—	Alive, mature.	Urine had a greenish-red fluorescence.	1·4	40·7
12	21	1	7	Pre-eclamptic. B.P. 158.	6 fits.	—	Discharged undelivered.	Deposit of urates; marked albuminuria; 4 days later only a trace.	2·372 2·439	57·32 55·76
14	28	1	9	Œdema under eyes. B.P. 158.	17 fits; first being 1 hour after delivery.	—	Alive, mature.	Catheter specimen; deposit of urates.	0·6277 0·9275	49·4 56·06
16	26	1	9	Œdema of legs and feet. B.P. 165.	8 fits; first fit immediately after delivery of head.	A.	Alive, mature.	Catheter specimen; deposit of urates.	0·5917	58·48
17	22	1	9	Œdema and headache. B.P. 210. Patient died probably of septicæmia.	9 fits after delivery.	I.A.	Alive, mature.	Catheter specimen.	0·1554	57·9
20	22	—	8	Patient unconscious. B.P. 150.	18 fits.	—	Alive, premature.	Catheter specimen; deposit of urates, and some casts detected.	1·687	58·67
29	27	1	—	Patient slightly confused. B.P. 165. Instrumental delivery. Developed chest symptoms and abdominal distension. Discharged after a fortnight with slight albuminuria.	A number of fits both before and after delivery (7 fits in all).	—	Dead, mature.	Triple phosphate crystals; a few W.B.C. and R.B.C. Granular casts.	0·2264	57·4

A. = active. I.A. = inactive. V.A. = very active.

TABLE III.—*Cases of Albuminuria not Complicated by Pregnancy.*

Case No.	Age in yrs.	Sex.	Condition.	% protein.	$[\alpha]_D$ of protein.
					Degrees
3	32	F.	Chronic nephritis, July, 1922	0·395	−53·3
			,, ,, Aug., 1922	0·8776	57·55
			,, ,, April, 1923	2·5895	55·42
			(d. Oct., 1924)		
4	40	F.	Chronic nephritis.	0·98	52·56
10	16	M.	? Orthostatic albuminuria.	0·475	52·23
24	12	F.		1·125	53·32
26	12	F.		0·1421	56·7

TABLE IV.

Solvent.	Concentration of solution.	Specific rotation.
Water	0·927 %	−52·86°
1 % sodium chloride ..	0·991 %	−52·5°
N/4 sodium hydroxide .	0·923 %	−68·25° ⟶ −17·55°

The racemisation curve for the human serum albumin was also determined for a 1 per cent. solution in N/4 sodium hydroxide, as described by Woodman (1921). It was hoped that this might later prove useful for comparative purposes. The data are given in Table V.

TABLE V.—*Human Serum Albumin.*

1 % in N/4 NaOH.

A = Time in hours. B = Specific rotation.

A.	B.	A.	B.	A.	B.
1	−68·25°	27	−45·50°	150	−24·92°
3	60·67°	55	34·90°	200	18·38°
7	53·09°	80	29·25°	240	17·55°

Optical Rotatory Power of Cow's Lactalbumin.

As it was impossible to obtain sufficient human milk for the isolation and polarimetric examination of human lactalbumin, the optical rotatory power of cow's lactalbumin was determined. Two quarts of fresh dairy milk were allowed to stand for some time and the cream then removed as completely as possible by skimming. To the skimmed milk (1850 c.cm.) two volumes of water (3700 c.cm.) were added, and the casein precipitated by the gradual addition of acetic acid with stirring. To complete the precipitation 17 c.cm. 10/1 normal acetic acid were required. Sufficient toluene was then added to form a film on the surface of the mixture, which was left to settle overnight. The clear supernatant fluid was syphoned off and then evaporated to a tenth volume at 30° to 40° C. under diminished pressure. The concentrated solution, after filtration through a folded paper, was warmed to 40° C. and treated with sufficient anhydrous sodium sulphate to give a 17·5 per cent. solution. The resulting precipitate was filtered off and the filtrate saturated with sodium sulphate at 40° C. The precipitated proteins were then dissolved in about 300 c.cm. of water, and the fractionation of the globulin and albumin carried out as previously described for urine and blood serum. The albumin solution was then dialysed until free from sulphate, concentrated somewhat in vacuo at 30° C., and after filtration through a No. 2 Chamberland candle its rotation and protein content were determined. From the Kjeldahl estimation the protein content was 0·9108 per cent., and the mean of ten readings for α in a 1-decimetre tube was −0·375°, so that the specific rotation of cow's lactalbumin

$$= \frac{-100 \times 0{\cdot}375}{1 \times 0{\cdot}9108} = -41{\cdot}17^\circ$$

Nature of Urinary Protein.

Considerable attention has been directed to the nature of the protein excreted in the urine in different diseases, but apart from the well-known case of Bence-Jones's protein (1848), and the crystalline globulin isolated by Noel Paton (1892), the coagulable urinary protein almost invariably has been regarded as a mixture of serum proteins. Senator (1874) drew this conclusion as far back as 1874, and this view, supported as it was by later biochemical tests, has persisted in spite of the fact that the presence of other proteins in the urine has been established (van Noorden, 1907). Consequently greater attention was given to investigations, such as those by Cloëtta (1891) and more recently by Mandelbaum (1919) and others, in which attempts were made to correlate the various diseases exhibiting proteinuria with the magnitude of the albumin to globulin ratio. Work of this type has proved of little value (Noel Paton, 1890), but with our increasing knowledge of the proteins themselves and improvements in our methods not only of distinguishing the different types of proteins, which may occur in urine and to which Cavazzani (1921) has recently urged attention, but also of differentiating the several members of the same group of proteins, it seems likely that by a more careful study of the chemistry of the proteins excreted in the urine some light may be thrown on at least certain types of proteinuria, the clinical importance of which has been fully appreciated by all physicians for many years.

It is well recognised that in the study of the carbohydrates, the determination of the specific rotatory power as a means of characterising and establishing the identity of the various members of the group has proved of the greatest value. In spite of the adverse opinion of Robertson (1918), the use of the polarimeter in the study of the proteins would seem to be equally useful, and recent work points in this direction. Thus the important results obtained by the racemisation method, introduced by Kossel (1912) and elaborated by Dakin (1912) and others (1913), are dependent on the detection of changes in optical activity. Further, the observation of Sebelien (1885), made 40 years ago, that the specific rotations of the albumins in serum and in milk were different is supported by the most recent chemical analyses (Hartley (1914), Crowther and Raistrick (1916), and Woodman (1921)). In the experiments described in the present communication it is shown that the albumin excreted in the urine in different conditions has not always the same rotatory power. From th is the reasonable conclusion is drawn that the urinary albumin may vary in kind—a result which would be difficult to obtain by any other method, although recently Ishiwara (1923), by a modified Abderhalden reaction, has differentiated the protein appearing in the urine in pregnancy from those in chronic and acute nephritis. Moreover, the polarimetric method has the further advantage that it indicates the *possible* nature of the protein in question. Thus, the mean value for the specific rotatory power of the albumin excreted in the cases of "albuminuria of pregnancy" without convulsions (Table I.) was −55·81°; that in six cases of the "high optical" eclamptic group (tabulated in Table II.) was −56·37°; and that in five cases of albuminuria not associated with pregnancy (tabulated in Table III.) was −54·27°. All these values agree closely with those obtained by the author for human serum albumin prepared by an exactly similar process—namely, −54·47°, −52·92°, and −52·86° (see above). It may be noted also that the values, while considerably less than the exact figure, −62·83°, reported by Young (1922) for crystalline horse serum albumin, approximates the values given by Lewis (1922) and also the earlier values recorded in the literature for serum albumin. These are summarised in Table VI.

From Table VI. one is tempted to conclude that the albumin excreted in the urine in the conditions referred to above is probably identical with serum albumin. This is in agreement with the generally accepted view, but the results obtained by Sammartino (1922) must be considered. This worker applied van Slykes's method of analysis to differentiate between the protein excreted in amyloid disease and in Bright's disease. At first sight the values reported, as is evident from Table VII., would seem to fit in with the protein excreted in both conditions being a mixture of serum albumin and serum globulin; but the values obtained for the cystine fracticn not only differ widely in the two conditions (being four times as great in amyloid disease as in Bright's), but also amount to only a very small fraction of the cystine present in the blood proteins. It is difficult to reconcile this result with the close agreement of the optical activity of normal human serum albumin and of the urinary albumin excreted in the cases of albuminuria of pregnancy, chronic nephritis, and orthostatic albuminuria examined by the writer. Consequently, until further investigations of this type have been carried out on "purified" urinary proteins, it seems preferable to regard the albumin in these conditions as probably serum albumin. On the other hand, the urinary albumin in more than 50 per cent. of the cases of "eclampsia" investigated by the author is probably different from serum albumin, as in this "low optical" group the mean value for the specific rotation of the albumin present was found to be −38·5°. It would seem a significant fact that while in no case of proteinuria uncomplicated by pregnancy nor in "albuminuria of pregnancy" *without* convulsions has an abnormally low specific rotation for the urinary albumin been observed, in a large percentage of the eclamptic cases the albumin excreted in the urine is considerably less lævorotatory than serum albumin. Experiments have been in progress to determine the nature of this low optically active urinary albumin, but owing to the difficulty of obtaining material suitable for such investigation, so far no definite conclusion has been come to and further work will be necessary. The value of the specific rotation, however, suggests that the albumin may be lactalbumin. As far as the author is aware, no record exists of the specific rotation of human lactalbumin, but it probably does not differ widely from that of cow's lactalbumin, for which Sebelien (1885) quotes − 36·4° to − 36·98°. This value is a little lower than the more recent figure—namely, − 41·23°, given by Piettre (1924). The latter agrees closely with that recorded in the experimental part of this paper (− 41·17°). Though, as the result of biological tests, such as those carried out by Hamburger (1901), Schlossmann and Moro (1903), and Bauer and Engel (1911), it seemed to be established that the serum proteins were identical with the corresponding milk proteins, it has now been shown that while serum globulin is chemically identical with lactoglobulin, lactalbumin and serum albumin are distinct chemical individuals (Hartley (1914), Crowther and Raistrick (1916), and Woodman (1921)). This, as already indicated, is in agreement with the observed difference in the specific rotation of the two albumins.

TABLE VI.

Observer.	Date.	Remarks.	Specific rotation.
Fredericque ..	1880	Amorphous material.	−56·07° to −58·41°
Starke	1881	Do. in aqueous solution.	−60·05°
Sebelien	1885	Dialysed solution in water.	−60·1° to −62·6°
Michel	1896	Crystalline material.	−61°
Maximovitsch	1901	,, ,,	−47·47°
Piettre and Vila	1921	Amorphous material (acetone); horse.	−54° to −58°
Lewis	1922	Horse serum.	−57·40°
Lewis	1922	Normal human serum (small amount $(NH_4)_2SO_4$).	−50·58° to −54·83°
Young	1922	Crystalline horse serum.	−62·83°

TABLE VII.

—	Urinary protein from—		Serum *or* lacto-globulin	Serum-albumin	Lact-albumin
	Bright's disease	Amyloid disease			
NH_3 nitrogen ..	7·79	8·78	7·77	5·8	7·93
Melanin nitrogen ..	2·72	3·19	2·14	1·1	1·82
Total N_2 of bases ..	*30·27*	*28·0*	*26·12*	*36·9*	*26·72*
Cystine N_2	0·08	0·33	1·87	3·5	2·18
Arginine N_2 ..	11·72	10·77	10·96	10·4	7·56
Histidine N_2 ..	4·15	4·78	4·47	6·7	4·44
Lysine N_2	14·32	12·12	8·82	16·3	12·54
Total N_2 of filtrate ..	*60·34*	*61·42*	*63·10*	*56·5*	*62·49*
Amino N_2 of filtrate	58·40	60·63	61·65	54·2	59·84
Non-amino N_2 ..	1·94	0·79	1·45	2·3	2·65
Total	*101·12*	*101·39*	*99·13*	*100·3*	*98·96*

Possible Significance of Lactalbumin in Relation to Eclampsia.

If, then, the suggestion that the "low optical" urinary albumin is lactalbumin be accepted, we have in certain cases of eclampsia an analogous condition to the lactosuria which not infrequently occurs in the later months of pregnancy or soon after labour. While corresponding to the symptomless albuminurias of pregnancy, there exists the fairly common glycosuria of pregnancy. However, while the presence of lactose in the blood and its excretion in the urine would do little or no harm to a patient, the presence in the blood-stream of lactalbumin, which must be regarded as a foreign protein, might entail grave danger. It may be that normally small amounts of lactalbumin find their way into the blood-stream during pregnancy, but that, as a rule, an immunity to this foreign protein is established. When this immunity is not established, or when a sudden release of a large amount of lactalbumin occurs corresponding to a "shock" dose of foreign protein, then eclampsia is the result. This view may suggest that eclampsia might be liable to occur in cases where a child dies at or soon after birth, or in cases where the mother for any reason does not breast-feed the child. No record of such an occurrence, however, is known to the author. If it be assumed not to occur, the fact is in perfect harmony with the theory suggested, for the mother in the majority, if not in all such cases, would be completely immunised against lactalbumin. Consequently, no eclampsia would ensue. The above view may also have a bearing in explaining the fact, now well established, that the incidence of eclampsia is much greater in primiparæ than in multiparæ.

The condition of eclampsia would thus be regarded as of the anaphylactic type, a view which has been strongly upheld by some workers, including Veit, Hofbauer, Roseman and Anderson, Gräfenburg and Lockmann, and also adversely criticised by others, amongst whom are Frank, and Heiman, and Zweifel, but, nevertheless, this view cannot altogether be ignored, for although Zweifel (1921) has stated that eclampsia cannot be considered as an anaphylactic reaction, that was only with respect to fœtal and placental proteins. Further, Levi (1922) has recently reported benefit produced by intramuscular injections of sterile milk in cases of pregnancy toxæmias including eclampsia.

A possible alternative explanation of the part played by lactalbumin is that in response to its introduction into the blood proteolytic enzymes would likely appear. By their action proteoses or other toxic decomposition products of the foreign protein would result, and unless the foreign protein and its hydrolysis products could be detoxicated by the liver or eliminated by the kidney rapidly enough, symptoms characteristic of eclampsia (or the pre-eclamptic state) would ensue. In this connexion it may be added that Hülse (1924) has presented evidence to prove that the increased blood pressure in eclampsia is caused by peptone in the blood; while Esch (1912) and Franz (1912) found in the serum and urine of eclamptics substances resembling anaphylactic poisons in their action and presumably derived from proteolysis somewhere in the body.

As recent work (Woodman, 1921) has shown that lactalbumin, like caseinogen, must be synthesised by the mammary glands, these glands are implicated in the causation of eclampsia. This idea, however, is not new. Sellheim (1909) suggested that eclampsia might possibly be due to toxins elaborated in the mammary glands, and Kastle and Healy (1912) advanced the view that parturient paresis (milk fever) in cows is caused by the absorption of toxic substances produced in the formation of colostrum and that the condition bears some resemblance to human eclampsia. Gessner (1921) also, in criticising Hofbauer's views on eclampsia, has pointed out that it also occurs in young cattle.

Further, unlike the proteinuria of, say, acute nephritis, that occurring in pregnancy is usually very materially influenced by the amount of protein in the diet. This fact, taken along with the well-known practice amongst farmers that a diet rich in protein is best for a good milk-supply, and the recent observations by Adair (1925) on the influence of diet on lactation in the human subject, would tend to support the view that the mammary gland is an important factor in the causation of eclampsia. In all the cases of the "low optical" group (Table II.), in which the condition of the breasts is reported, they are stated to be practically inactive. This inactivity may be explained by the stimulus for milk production coming too early, perhaps as the result of overactivity of the corpus luteum (Swale Vincent, 1924; Wallis and Williams, 1922), and thereby bringing about eclampsia. It is well to remember, however, in this connexion the observation by Hartwell (1921) that certain protein dietaries apparently render milk poisonous and finally check its flow.

The experiments described in this communication are only of a preliminary nature, but owing to the comparative rarity of eclampsia and the consequent difficulty in obtaining suitable material for such investigations the results so far obtained are published. The author is well aware, however, that much further work will be required and a greater number of cases investigated before the suggestions offered in the foregoing pages can be accepted as established facts.

Summary.

1. Experimental evidence is submitted which shows that the protein excreted in the urine in various conditions is not always identical.
2. In the 12 cases investigated of "albuminuria of pregnancy" without convulsions the specific rotation of the urinary albumin averaged −55·81°, and thus agreed with that found for human serum albumin under similar treatment—namely, −54·47°.
3. A similar close agreement in specific rotation—namely, −54·27°—was found in five cases of proteinuria not associated with pregnancy.
4. On the other hand, the 14 cases of eclampsia investigated were sharply divided into two groups, one group of six having an average $[\alpha]_D$ of −56·37°, and the other group of eight having an average $[\alpha]_D$ of −38·5°.
5. The optical activity of the albumin in the former group agrees well with that of serum albumin (−54·47°), while that in the latter approximates closely to that of cow's lactalbumin (−41·17°).
6. Accordingly, it is suggested (*a*) that in certain types of eclampsia the urinary albumin may be mainly lactalbumin; (*b*) that eclampsia may be an anaphylactic reaction due to the circulation in the blood of this foreign protein; and (*c*) that the mammary gland may be an important factor in the causation of eclampsia.

In conclusion, the author wishes to express his thanks to the staff of the James Mackenzie Institute for Clinical Research for assistance in various directions; also to Dr. A. E. Chisholm, of the Royal Infirmary, Dundee, for supplying the majority of the specimens; and also to Prof. P. T. Herring, of St. Andrews University, for much encouragement and advice.

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A CASE OF ABDOMINAL LYMPHADENOMA.

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THIS case is recorded on account of the unusual features presented as regards diagnosis, distribution of the lesions, and mode of death.

A female, aged 26, was admitted to the Royal Hospital for Diseases of the Chest on August 5th, 1924, from the Willesden General Hospital, whence, having been observed to be febrile and to lose weight, she was transferred for observation as to her chest.

She had suffered for about a year from pain in the right thigh and leg, in the sacral region, and occasionally in the left thigh. She also complained that some curvature of the back had developed.

Condition on Admission.—The patient was thin and pale. Temp., 102·8° F.; pulse, 144; resp., 22. Mucous membranes were of good colour, no cyanosis or jaundice, there were some small deep ulcers on the face. Tongue red and glazed; no glandular enlargement in the neck. Pulse regular, blood pressure 100 mm. Hg systolic and 75 diastolic. Heart and lungs presented no abnormal physical signs. The abdomen was rigid and difficult to palpate, particularly in the upper part. A few hard glands in the right groin. A definite kyphosis of the lower dorsal and lumbar region was present with rigidity, but no redness or tenderness. No sensory changes in lower limbs or trunk; nothing significant in reflexes. Urine, sp. gr. 1010, acid, contained trace of albumin but no sugar. There had been amenorrhœa for 12 months. The findings did not suggest disease of the chest or central nervous system. The patient was quite definite that the spinal deformity was of recent (within six months) development.

Course and Progress.—Temperature fluctuated between 98° and 101°; pulse-rate varied from 144 on admission to 92; respiratory-rate from 20 to 26.

Blood Count (August 9th, 1924): Hæmoglobin, 77 per cent.; red blood corpuscles, 4,600,000, some anisocytosis and polychromatophilia. White blood corpuscles, 23,000 with differential count: Polymorphs, 91 per cent. (20,930 per c.mm.); small lymphocytes, large lymphocytes, and large hyaline, each 3 per cent. (690 per c.mm.); eosinophiles and basophiles, 0.

Urine.—No casts. On culture *B. coli*, *B. proteus*, and an organism resembling a fæcal streptococcus were recovered.

There were occasional attacks of severe pain down the back of the thighs.

Pelvic Examination revealed no abnormality. A swab taken from the cervix uteri showed pus cells with a streptococcus as the prevailing organism.

X Ray Examination of the Spine by Dr. C. Gouldesbrough showed abnormalities of ninth and eleventh dorsal and fourth lumbar vertebræ, which were wedge-shaped. "The outlines of the vertebræ are very regular and do not suggest tuberculous caries so much as mechanical pressure." Rarefaction of the body of eleventh dorsal was noted. On August 20th, 1924, the right side of the face was noted to be puffy. Albumin was present in the urine in small quantity. On the 28th the face and ankles were definitely œdematous, and the urine showed increase of albumin. From the 31st the daily quantity of urine varied from 12 to 28 oz., and the albumin rose from $\frac{1}{4}$ parts per mille (Esbach) to 9 (Sept. 2nd), remaining afterwards fairly constant at that figure. Microscopical examination of urinary deposit showed pus cells and leucocytes—small epithelial cells and a few doubtful granular casts. Urea-concentration test indicated a definite urea retention. On Sept. 13th hyaline and coarsely granular casts were found with some pus and epithelial cells. The abdominal condition remained much as before, the liver was felt and was apparently tender.

The condition was provisionally diagnosed as amyloid disease, supervening on a chronic streptococcal infection of the vertebral column, or alternatively neoplasm of the vertebral column. The œdema continued, vomiting, dyspnœa, and headaches supervened, and the patient died in coma Sept. 21st, 1924.

By the courtesy of Dr. Vickery, resident medical officer of Willesden General Hospital, we learned that while there the temperature ranged from 98° to 100° with occasional evening rise to 101°. There had been no albuminuria.

Post-mortem Appearances.

External Appearance.—Generalised œdema, marked abdominal distension, several small facial ulcers, no palpable enlargement of glands.

On Section.—1. Thorax: About 2 pints clear brownish fluid in each pleural cavity; lungs showed very marked collapse; no pleurisy or pleural scarring. On section lungs contained no excess of blood or any œdema fluid; there was a purulent exudate in bronchi. Heart: Small excess of clear pericardial fluid, very slight roughening of pericardium over left ventricle; valves competent; muscle poor. 2. The abdomen contained about three pints of yellowish-brown fluid containing a few flakes of fibrin. Some cheesy fibrinous exudate over the pelvic floor; no inflammation of uterus and adnexa. The liver showed a large nodular, pale yellowish area on its anterior surface, and was generally enlarged, extending well below (2 inches) the costal margin. On section this pale area, which was about 3 inches in diameter and irregular in outline (with small outlying area), extending deeply into liver, and resembled a malignant tumour. The spleen of normal size or rather smaller. On section was a typical "sago-grain" spleen, the grains of considerable size, and the intervening tissue dark purple (iodine test negative). The kidneys were of medium size and of extreme pallor, in colour slightly yellowish-grey. They stripped with some difficulty. On section this pallor was still more noticeable, the colour being grey-white with some yellowish streaks in the medullary region. Iodine test negative. The pancreas was large and unususally tough. Lymphatic system: All lumbar and sacral glands were densely matted together and to surrounding structures, exceedingly tough and hard, but only moderately enlarged. The matting appeared to be of the nature of a chronic inflammatory fibrosis rather than malignant extension, the great veins being attached to, but not infiltrated by, the glands. Some glands were firmly fixed to the anterior ligaments of the lumbar spine in the same way. No other gland groups appeared to be affected. Spinal column: The eleventh dorsal vertebra was about half the thickness of adjacent vertebræ. The discs showed no abnormality, but the body of the vertebra was soft and pulpy. Adjacent vertebræ were not affected, but the body of the second lumbar vertebra was also found to be soft to the knife. (The eleventh dorsal vertebra was removed for section.)

Histology.

Examination of sections from the lumbo-sacral glands, the spleen, and the deposits in the liver and bone show the characteristic picture of lymphadenoma of the acute type ("malignant type" of some authors). At the growing edge of the deposits in the liver the granuloma showed most clearly the varied nature of its cells, many endothelioid cells with some giant endothelioid cells containing one to three large irregular hyperchromatic nuclei, reticular cells, a few small lymphocytes, fairly numerous eosinophiles, and some plasma-cells. The spread in the liver was primarily from Glisson's capsule along the inter-lobular connective tissue, and then by direct extension into the lobules themselves. At the edge of the granulomatous areas the liver cells showed shrinkage and degeneration, and marked increase of the supporting and endothelial cells and deposition of pigment. In the walls of a few of the capillaries small amyloid deposits were found.

A similar appearance was found in the more outlying glands of the lumbo-sacral group (apparently those most recently infiltrated). But in the more central glands of the group, which were densely matted together, considerable fibrosis had taken place. Sections of the spleen showed enormous increase of reticular structures, generalised fibrosis, and collagen deposition. In the fibrous tissue a few endothelioid cells were present, and in the less fibrous areas the typical cells of the granuloma were found. Areas of pigmentation and some small amyloid deposits in relation to capillaries and fibrosed Malpighian corpuscles were also observed.

Sections of the body of the eleventh dorsal vertebra show considerable bone destruction, although few active osteoclasts were seen. The bone and marrow appear to be largely displaced by a scantily cellular tissue with a few areas of lymphocytic infiltration containing some endothelial cells, reticular cells, and "giant cells" (the latter quite distinct from the multinucleate cells of the marrow). The nature of the granulomatous infiltration was less obvious here than elsewhere.

Sections of the kidney show advanced amyloid degeneration of the walls of the glomerular capillaries and of the capillaries running parallel with the pyramidal tubules. The kidney shows also granular and cloudy changes in the tubular epithelium and a considerable increase of inter-tubular connective tissue, partly fibrous in nature but rather more cellular than the interstitial tissue of chronic interstitial nephritis. This tissue showed early endothelial hyperplasia and may possibly represent an early infiltration similar to that found in the liver.

Conclusions.

Diagnosis by examination of an excised gland is not available in the "abdominal form" of Hodgkin's disease because only deep lymphatic glands are affected. In this case the clinical picture was obscured by a polyleucocytosis (probably of secondary origin), radiological appearances and postural changes of an uncommon nature, and the late onset of renal amyloidosis. Bony infiltration and amyloidosis are both recognised sequelæ of Hodgkin's disease, although comparatively uncommon.

DONCASTER INFIRMARY.—It is proposed to build a new infirmary at a cost of £300,000. The existing buildings, which contain 65 beds, have been twice enlarged in the last 20 years, but are still so inadequate that many patients have to be sent to Sheffield, Leeds, Hull, and Nottingham. When the infirmary was established in 1792 the population of this area was 15,000; it is now nearly 200,000. The miners and railway men, who form 80 per cent. of the working population, together with the glass-workers, have submitted to a weekly deduction from their wages towards a building fund, and their payments amount to £12,000 a year.

SHEFFIELD HOSPITAL SITE.—Sheffield recently has been fortunate in securing Norton Park as its future hospital site. This park, situated in an elevated position well above the city, is 120 acres in extent, and within 12 minutes ambulance service of the city centre. The value to the hospitals of this site has been considerably enhanced by the generous gift from Councillor and Mrs. J. G. Graves, of Sheffield, of the remaining 154 acres of adjacent land and wooded estate, making an open space of 274 acres, thus safeguarding for all time the future voluntary hospitals of Sheffield from any proximity to industrial and residential buildings.

Clinical and Laboratory Notes.

A NOTE ON THE GLOBULIN AND COLLOIDAL GOLD REACTIONS OF THE CEREBRO-SPINAL FLUID

AFTER THE MALARIAL TREATMENT OF GENERAL PARALYSIS OF THE INSANE.

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DURING the observation of 80 cases of general paralysis treated with therapeutic malaria, it has been found expedient to re-examine the cerebro-spinal fluid in 25 cases at varying dates after the termination of the pyrexia. Although recent observers, including McAlister [1] and Houston and Armstrong,[2] have stated that little or no alteration in the reactions of the cerebro-spinal fluids is to be seen, our findings hardly seem to support their views, at least in so far as the globulin and colloidal gold tests are concerned.

From the results we quote below it will be seen that more than half the cases mentioned now show a negative reaction to the globulin test, whereas all showed a positive result before treatment.

As regards the colloidal gold reaction, even allowing for the human element in taking the readings, the changes more or less correspond in their occurrence with the conversion of a positive globulin reaction into a negative one; furthermore, the change has not only been the "displacement to the left and upwards" mentioned by Pappenheim, but is also of the nature of a conversion of a true paretic reading to that more usually associated with a diagnosis of cerebro-spinal syphilis. (Table I.)

TABLE I.

Case.	Before treatment.		Period since treatment.	After treatment.	
	Coll. gold.	Glob.		Coll. gold.	Glob.
1	5555554321	Pos.	16 months.	4555544300	Pos. weak.
2	5555310000	,,	18 ,,	0144432100	Neg.
3	5555555532	,,	22 ,,	2345554300	,,
4	5555542222	,,	19 ,,	1155553100	Pos.
5	5555554310	,,	4 ,,	2555543000	,,
6	5555421100	,,	8 ,,	2444433211	Pos. weak.
7	5555554321	,,	21 ,,	0234331000	Neg.
8	5555543210	,,	11 ,,	1333321100	,,
9	5555532000	,,	17 ,,	0123432200	,,
10	5555533110	,,	12 ,,	0123322300	,,
11	5555521000	,,	16 ,,	0133332100	,,
12	5555542100	,,	33 ,,	5555554420	Pos.
13	5555431000	,,	11 ,,	0112332100	Neg.
14	5555551100	,,	14 ,,	0023321100	,,
15	5555555410	,,	15 ,,	0155432000	,,
16	5555542100	,,	16 ,,	0124432200	,,
17	5555322100	,,	16 ,,	3335444300	,,
18	5555541000	,,	15 ,,	0123443100	,,
19	4555543300	,,	12 ,,	0255544321	Pos.
20	5555554100	,,	15 ,,	4555553311	,,
21	5555555543	,,	13 ,,	0125543300	Neg.
22	1125555510	,,	14 ,,	5555544300	Pos. weak.
23	4555555443	,,	13 ,,	4555544300	Pos.
24	5555555430	,,	7 ,,	5555555432	,,
25	5555554200	,,	6 ,,	4555553220	,,

It must be pointed out, however, that changes in the globulin and colloidal gold reactions do not necessarily correspond with the presence or absence of definite clinical improvement. (Table II.)

TABLE II.

Reaction.	Physical condition.		Mental condition.	
	Improved.	Not improved.	Improved.	Not improved.
Altered	8	6	5	9
Not altered ..	7	4	6	5

Of the ten cases shown as not physically improved it should be pointed out that six were admitted in fair health and are still in that condition.

Although we do not attempt to draw any conclusions from our findings, it may be of interest to note that of those cases admitted in an advanced condition of general paralysis (showing progressive dementia and faulty habits coupled with physical debility), out of a total of 12, 8 have shown no appreciable alteration in the reactions of the cerebro-spinal fluid after treatment with malaria. On the other hand, out of the 13 early cases, 10 have shown definite changes in these respects.

We are indebted to our medical superintendent, Dr. F. M. Rodgers, for permission to report our findings.

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[1] W. M. McAlister: Journal of Mental Science, January, 1924, and April, 1925.

[2] T. Houston and E. Armstrong: Ibid., October, 1924.

TRAUMATIC LESION OF THE CAUDA EQUINA; LAMINECTOMY; RECOVERY.

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THIS case of injury to the cauda equina presents several features of interest that render its record desirable.

The patient, a stone-mason, aged 45, fell 40 feet to the ground in a scaffold accident on Sept. 3rd, 1924. He was admitted at once. In addition to severe shock he had extensive contusions over the lower ribs and in the lumbar region, and he had a Pott's fracture on the left side and some fractured metatarsals on the right side. The abdomen rapidly became distended and tender, and there was vomiting and hiccup. The lumbar spinous processes appeared to be somewhat irregular and the power of the lower limbs impaired, but an exact investigation was rendered difficult by reason of the fractures.

The following day the man had retention of urine and complained of severe lumbar pain, and on Sept. 5th there was loss of control of both urine and fæces. On the 6th the lumbar cerebro-spinal fluid was found to be intimately mixed with blood.

Examination on the 7th showed weakness of the lower limbs but no palsy at any joint and no abnormality of cutaneous sensibility. Tuning-fork vibrations were correctly perceived. The knee-jerks were normal, the ankle-jerks were abolished, the calf-jerks were normal. The epigastric and abdominal reflexes were all normal. On the 10th there was paresis of the lower limbs. The knee-jerks were exaggerated equally and both ankle-jerks remained abolished. The abdominal reflexes were all healthy, but the plantar responses and the superficial anal and bulbo-cavernosus reflexes were found to be all absent. Erections had not occurred since the accident. Sensibility to every variety of stimulus was normal throughout. The lumbar cerebro-spinal fluid contained still a little blood. A lesion of the cauda equina, below the second lumbar segment, was diagnosed and a radiogram showed a fracture of the first and second lumbar vertebræ.

Laminectomy was performed on Sept. 11th and disclosed much extra-thecal blood clot. Within the theca there was no blood clot and the cord, which did not pulsate, appeared to be otherwise unaffected. A catheter was passed freely upwards and downwards within the theca. The bony canal was diminished in its antero-posterior diameter at the site of the fractures by a posterior displacement of the bodies of the last two dorsal and first lumbar vertebræ. The pressure on the cord had been exerted, so far as could be ascertained, opposite the second and third lumbar segments, causing it to be bruised on its anterior aspect. Not until the firm, partly organised, decolorised extra-dural clot had been completely removed did the cord pulsate.

Two days after the operation the man complained of tingling and shooting pains in the lower limbs. There was already some return of power in the legs and by Sept. 24th they were still stronger. On Oct. 1st the ankle-jerks were still abolished. During the first week of October convalescence was interrupted by bronchitis and slight mental derangement. He improved after phlebotomy. On the 8th he passed urine naturally for the first time since the accident, and by the 14th there was still further improvement in this respect and in his general condition. On the 20th the ankle-jerks were elicited and on the 23rd he was allowed out of bed. He walked for the first time on Nov. 10th, and he now had fair control of both sphincters. This control was almost complete by Dec. 5th, and on the 8th he was walking normally on the level and on stairs and without pain. The bulbo-cavernosus reflex was now present on the left side, absent on the right. The superficial anal reflex was absent. Erections had not returned. He was discharged on Dec. 8th, 1924, on the eighty-ninth day after operation.

He was again seen on June 13th, 1925. Apart from total impotence, slight delay in commencing micturition and the occasional leaking of a little urine at the end of the act, and some precipitancy of defæcation, he was well, but he complained of a little pain in the lower spine. Knee- and ankle-jerks were healthy. The epigastric, abdominal, cremasteric and plantar reflexes were all normal. The bulbo-cavernosus reflex on each side was normal and the superficial anal reflex had recovered its activity.

INTESTINAL HÆMORRHAGE CONTROLLED BY COAGULEN (CIBA)

DURING A SEVERE ATTACK OF TYPHOID FEVER.

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THE knowledge of an easily administered and reliable styptic is a great mental comfort in emergency, so I am placing on record an instance of the successful use of coagulen (Ciba) in a case of typhoid with intestinal hæmorrhage. Coagulen (Ciba) is the name given to a preparation of fibrin ferment, the properties of which were established[1] by Dr. Fonio in Kocher's clinic in Berne. It is now marketed by the Clayton Aniline Co., and its rapid action in two striking cases, one of tonsillar hæmorrhage, the other of hæmoptysis, has been recently recorded.[2] In the following case the drug was instrumental in saving the patient's life.

E. L. C., aged 19, contracted typhoid on the continent of Europe early in July, 1925, and the case came under my care on July 24th. It was a severe attack, characterised, as also in her sister, who simultaneously contracted the disease, by the high initial temperatures. On August 2nd the temperature, which had dropped after much struggling from the region of 105° to 103° F., shot up again to 105° and a sharp hæmorrhage made itself evident. A dose of 1·5 c.cm. of coagulen (Ciba) was given intramuscularly and repeated four hours later. Though a large quantity of altered blood and blood-clot was evacuated during the next two days there was no more fresh bleeding. On August 17th there was another hæmorrhage, even more severe than the first, without the rise in temperature that had announced the former. Two more intramuscular injections of 1·5 c.cm. at four-hourly intervals were given and again the bleeding ceased and was no more repeated. A careful watch has been kept ever since for any signs of venous thrombosis, but there has been none, and the patient's convalescence has progressed far enough now, though she is still in bed, to justify the hope that that tiresome complication will not manifest itself.

I have used coagulen (Ciba) in a fair number of cases of hæmorrhage from various causes without it once failing me, and it is satisfactory to record its successful use in a patient desperately ill without any unpleasant after-effects or reaction.

Medical Societies.

ROYAL SOCIETY OF MEDICINE.

SECTION OF SURGERY.

THE TEACHING AND PRACTICE OF SURGERY.

THE first meeting of this Section for the session was held on Oct. 21st, when Sir **LENTHAL CHEATLE**, the new President, delivered an address on the Present State of the Teaching and Practice of Surgery. He divided his subject into three main portions—research, specialties, and treatment.

Research.

Concerning research, he said that he had an intimate talk during last year with a surgeon from the provinces, who remarked that provincial surgeons no longer looked towards the surgeons of London for new notions or leadership, and the reason given was that little or no original research was being done by the London men. Perhaps, Sir Lenthal Cheatle said, all surgeons had had some such thoughts themselves. Taking the first allegation, that London was losing its surgical leadership because it had few men engaged in research work, that must be due to the fact that, in these days, mere technical ability was not enough to maintain leadership or to regain the lost ascendancy. He who was only a so-called clinical surgeon had lost his position as leader in his profession; he could add very little to knowledge, and could himself acquire little more except added skill in technique. Indeed, without research work there was not much encouragement for him to think at all, and so he had a limited outlook. Every surgeon should conduct some research, however little, in association with his actual operating. As a rule, a man could find time for the things he really wanted to do. He had advised students to start original investigation by cutting at different edges wounds of the skin which had healed by first intention. By studying intently some such subject for six months a student would know more than anyone in his year on that subject. If such a man, in the course of his study, came across such a statement as that malignant ulcers of the stomach commonly arose from simple ulcers, he would not accept it as a fact, but would seek to test the statements on which such a belief was founded. He would then find that ulcers excised under the idea that they were simple were really extensively carcinomatous, and that ulcers reported upon as early carcinomata were simple ulcerations in which epithelium was dislocated. There was no pathological evidence that malignant ulcer of the stomach was a complication of a previously simple one. Research work perfected a man's data and led others to perfect theirs; it also kept the mind young, and supplied a constant inspiration, as well as supplying facts and notions not to be found in books. An instance of this was the research of Prof. C. L. Bagg, of New York, who took a healthy strain of mice and mated them, and immediately on the birth of the litters separated them from their mothers so that they could not suckle, then re-mated those mothers, and their next litter was treated in the same way; 87 per cent. of those mothers developed fulminating carcinoma of the breast, and the same result followed ligation of the mammary ducts on one side (the litter being allowed to suckle from the other side), the carcinoma appearing in the ligated breasts. He thought the experiment may have proved that there was another factor essential to the organism than Gye's specific factor—namely, the preparation of the epithelial cell—or it might be that the specific factor had been made more active. He said he considered the term research covered any means by which one strove to add to knowledge of the cause, prevention, and treatment of disease, and he urged, as he had done on former occasions, a much closer collaboration between the clinician and the specialist. The great hope for the future lay in the encouragement of research by the unit system of teaching. Money could not subsidise genius, but he thought it would create a body of men more capable of leading in their profession than any who had existed in the past, and, in due course, genius would come along. The surgeon should always have a skilled assistant available; at present his assistant became skilled when he was due to leave, and a novice took his place, and the same process was repeated. Yet a skilled assistant meant halving the time of an operation and lowering the mortality. The director of a teaching unit should be allowed to have private practice; it would render him a more human and tactful soul, make him a better teacher and operator, and give him a better conception of a surgeon's duties.

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[1] THE LANCET, 1914, ii., 173.
[2] THE LANCET, 1925, i., 176 and 1238.

Specialties.

Dealing next with specialties, the President said that a further cause of the atrophic state of surgery was the breaking up of this practice into various and completely unnecessary specialties—a system wrong in principle and profoundly wrong in practice. Nature did not specialise, and specialists often lost sight of great guiding principles. The problems of infection, tumour formation, and biochemical changes concerned all parts of the body, and exclusive attention to a small part of the body precluded attention to other tissues as well, unless several specialists acted in conjunction. Already the rigid confines of specialties were being broken down; modern gynæcologists operated on everything connected with the female, except a cerebral lesion, and the laryngologist was now including in his purview extralaryngeal conditions such as goitre, carcinoma of the tongue, and glands of the neck. He would like a means to be discovered whereby this separation of the specialties might be stopped, and he would be glad to see new facts and interests propounded to the whole of the Royal Society of Medicine, whoever the specialists might be who could bring such facts forward.

Treatment.

His last heading, Sir Lenthal Cheatle divided into qualified and unqualified. With regard to qualified practice, he said there was a great and increasing demand on the part of the public for surgical aid near at hand, especially for acute cases, while the body of patients suffering from surgical disorders which were not acute was so enormous that it could not be dealt with in the great centres. Hence large suburban hospitals had been built, and these were staffed by surgeons of first-rate calibre, and they could no longer be regarded mainly as nurseries for men whose ambition was to become attached to the staff of their teaching hospital and school. The men at the outer hospitals must be competing with the teachers and practitioners in the centre. The old system, he said, was really obsolete, and unfortunately the "old" system was the present one. The kudos attaching to a surgeon on the teaching staff, considerable at one time, was now insignificant. The idea seemed to be, "If you teach our students, you shall not run a private practice." It was the younger teachers who were feeling the effects of the decentralisation. And if the best men were prevented from teaching, what would become of efficient teaching? The demand for efficient teachers could only be met by offering high salaries. The problem could only be solved by Parliamentary action, by a controlling Ministry of Health which must be quite free from political fetters; he was not referring to a body such as the present Ministry, which was so hampered by political lumber that it had little or no time to devote to the problems of public health. The headship of it should not be a prize bestowed on a politician for services to his party.

His own views on unqualified practice, he said, were well expressed in the recent presidential address of Sir Holburt Waring to the Medical Society of London, but the condition of affairs revealed in the discussion on that address could not have occurred if a carefully selected doctor had been head of the Ministry of Health.

Prof. C. C. Choyce proposed and Prof. C. A. Pannett seconded a cordial vote of thanks to the President for his address, both expressing general agreement with its main theme.

SECTION OF EPIDEMIOLOGY AND STATE MEDICINE.

A meeting of this Section was held on Oct. 23rd, Dr. J. McVail, the President, being in the chair.

Dr. T. Stacey Wilson opened a discussion on the management and treatment of

Scarlatinal Epidemics in Boarding Schools.

He said that his 25 years' experience in the Royal Institution for Deaf and Dumb Children at Edgbaston led him to class the difficulties of recognition under two heads: (1) Where the patient had only very slight initial symptoms, and (2) where he had no initial symptoms at all, desquamation being the first sign of the illness. Both classes were highly contagious. A child might show nothing but an attack of vomiting or slight pyrexia and yet infect everyone with whom he came in contact. The epidemic was very persistent and would run on for three months in spite of every effort to stop it. It was not always possible to isolate incipient cases, for the only symptom might be a slight flush on the skin of the thigh. This flush might spread or alter its position from day to day or might be gone altogether in 12 hours. The patient was fairly certain to show peeling after a fortnight or so. Although it was not generally accepted, his experience amply proved that many patients showed no symptoms at all before desquamation. In an epidemic that had broken out in the middle of the term he inspected the hands and feet of all the children and found a girl with typical desquamation but no symptoms whatever. He suspected her of being the original cause of the outbreak and one child infected by her died. He had sent 30 or 40 such cases to the fever hospital in the course of 25 years. The difficulties of diagnosis were illustrated by his experience on one occasion when he isolated six or eight children with typical scarlatinal roughness of the hands and feet, and a few more with roughness that he thought was not scarlatinal; of the suspects not one broke out but two or three of the others did. When he said that some cases had no rash at all he admitted the possibility that there had been a rash too slight to attract notice, but since noticeable rash was always attended by symptoms such as sore throat, pyrexia, and a fever-tongue, he thought it legitimate to infer that when these symptoms were not present there was no rash. These patients with no symptoms constituted the chief difficulty in managing the epidemic.

Types of Desquamation.

The disease was often so mild that it only caused exfoliation where the skin was very thin, as between the toes or on the division between the hard and soft skin of the feet and hands. Even in these places the friction of clothes, &c., was likely to destroy the evidence. Since the feet of many people were in a constant state of desquamation diagnosis could not depend entirely on this sign. The true eruption was punctiform, the epidermis broke over small areas, an eighth to a twelfth of an inch in diameter, making small rings or blisters which expanded and became irregular and ragged at the edge. The presence of two or three of these rings was strong evidence of scarlatina. It was important to remember that where skin had become sodden through washing circular breaks might appear in normal people. If these did not increase in size they were not scarlatinal. The appearance of fresh circles between the toes on successive days was fairly good evidence of the disease. Sometimes these eruptions were only visible immediately after washing the feet, and were often so evanescent that only a weekly examination would detect them. If 160 children were examined simultaneously many would have to sit about with wet feet for 20 minutes, which was apt to produce the spurious desquamation described above. Some children became known in time for a chronic spurious desquamation, the rings of which did not increase in size. The edges of the scarlatinal rings did not get dirty but always showed a border of white. (He then showed a most interesting series of photographs prepared with great care by one of the assistant masters which illustrated several types of true and spurious desquamation.)

Discussion.

Dr. E. W. **Goodall** remarked that, for purposes of observation, an institution such as that in which Dr. Stacey Wilson had gained his experience had the advantage over a fever hospital that the population was fixed, while that of the hospital was constantly shifting, and no patient could be watched continuously for months, or even for weeks. It was true that scarlet fever had long been known to occur without a rash, and he admitted that it was much the most difficult of the fevers to diagnose. He would far sooner have to diagnose a case of small-pox. Not a single symptom was characteristic and every one might occur in some other disease; diagnosis had to depend on a combination of symptoms. Some of the severest cases had no rash and were only detected after they had caused an outbreak of scarlatina in a diphtheria ward. Desquamation might be caused by the pressure of the bed or the clothes. In spite of what Dr. Stacey Wilson had said, he maintained that there was no typical desquamation in scarlatina. He had once thought that the pinhole form was typical, but had since seen it in an enema rash, an antitoxin rash, rubella, measles, and even in a rash caused by rubbing with camphorated oil. The disease might even occur without any desquamation; the more brilliant the rash the more liberal the peeling. The strawberry tongue was far more a sign of measles than of scarlatina. So untrustworthy a sign was desquamation that no patient in the North-Western Hospital was ever placed in a scarlatina ward without a period of isolation. He had once admitted a case with liberal desquamation of exactly the scarlatinal type; the peeling was due to a scald some days old, but the patient contracted scarlatina in the ward and died. A true scarlatina case had developed acute nephritis three weeks after a slight rash had broken out, showing that the required period of isolation was sometimes very long. He remarked that Dr. Stacey Wilson's inspection, thorough though it was, did not seem to have cut short the epidemic. He also questioned very strongly whether desquamation was really infectious in itself. The infection was surely spread, not from the peeling skin, but from the mucous membranes of the throat and nose. The returned case-rate had not gone up since he began to send out large numbers of children still desquamating. Perhaps the Dick test and other new methods would help to cut short epidemics.

Dr. F. M. **Turner** remarked that another cause of desquamation was sunburn, especially from intensive sunlight treatment. This caused an erythema followed by peeling very similar to that of scarlatina, so that it was well to inquire if a suspect had been undergoing light treatment. Peeling under the toes was far too general and unreliable to be a sign of scarlatina except to a very experienced observer. A desquamation exactly similar to that of scarlatina occurred occasionally in measles.

Dr. D. **Forbes** said that in school-children where daily inspection was not possible, it was very difficult to distinguish accidental desquamation from scarlatinal peeling, especially if the child were dirty. It was possible for true peeling to become so covered by dirt as to be indistinguishable from spurious. A child was not infectious when peeling unless the throat and nose showed positive signs of the disease.

Sir John **Broadbent** agreed that infection was spread from the throat and nose and not by desquamation. A peeling tongue was a valuable sign after the disappearance of the rash; this never occurred in measles. He described a throat carrier, a child who had had scarlet fever, with headache, vomiting, and sore throat, and who spent eight weeks in hospital, during which time she peeled. Ten days after discharge she went to stay with two old ladies, both of whom developed scarlet fever, one fatally. After a time in a convalescent home the child went home and infected her brother, although she had been perfectly well since she left hospital.

The Dick Test.

Perhaps the Dicks' cultures would help to detect scarlatina carriers as the Schick test detected diphtheria carriers. He had seen cases of bleaching rash detected by the Dick test. When the toxins and their doses had been properly standardised they would be invaluable in testing suspects. A positive reaction would show that the child had never had scarlatina.

Dr. R. A. **O'Brien** said that in his experience the Dick test was not as reliable as the Schick test. Theoretically, the Dick test should give a positive reaction during the first three days of the rash, but in England it had been found that only 70–90 per cent. gave it with 1/1000 toxin. The Dick test would be helpful, in a school like Dr. Stacey Wilson's, in isolating the right children. A child who gave a negative result was almost certain to be immune, though the evidence for this was not quite conclusive. It might be useful to know how soon in an infection a positive Dick reaction became negative. A hæmolytic streptococcus had been isolated from the throat of scarlatinal patients, and he was hopeful that some way of identifying this coccus would be found before long. Gordon's agglutination test for crusts in small-pox had proved of great value, but since scarlatinal skin was now known not to be infectious it was no use there. Possibly some agglutination test might be devised for sputum in scarlet fever.

Dr. S. Monckton **Copeman** said that the disease was much less severe now than when he was a boy. It was much more intense in New York than in this country. The best way of dealing with an outbreak was to carry out the Dick test and immunise susceptible children. A child who gave a negative reaction on admission with a doubtful rash had never caught bad scarlatina in the wards, therefore a Dick negative, although not quite so certain as a Schick, practically meant immunity. A child who gave a Dick negative was not infectious.

Dr. Major **Greenwood** said that isolation measures had not been successful in diminishing the scarlatina incidence; the only hope lay in immunisation.

Dr. T. **Carnwath** said that in Salford cases were discharged after four weeks, sometimes desquamating heavily, and the disease was no worse there than in Manchester where they were kept in six weeks. In Wallasey, where they were only kept three weeks, there were no more return-cases than in other towns. He mentioned a child who had been discharged five weeks and then caught a cold and immediately infected his three brothers. This suggested a latent virus in the throat, liberated by another infection.

Dr. G. C. **Trotter** said that in Paisley they discharged cases after four weeks if they had no nasal or pharyngeal discharge, and had had fewer return-cases than when they kept them in longer. He had known a spurious desquamation caused by playing with lime. Second cases occurring in a family were often missed because there was no system in London by which the second case went to the same fever hospital.

The **President**, in concluding the discussion, said that the malignancy was worse in every way 50 years ago. Hospital isolation had not affected the incidence, but gave the children much better treatment and a better chance of recovery. Future control of the disease would depend on immunisation, but public apathy and dislike of these measures made the work difficult.

SOCIETY OF SUPERINTENDENTS OF TUBERCULOSIS INSTITUTIONS.

Diagnosis and Treatment of Pulmonary Tuberculosis.

AT a meeting of this Society, held on Oct. 19th, Dr. J. W. LINNELL related his experiences at the Victoria Park Hospital, National Hospital, Ventnor, Mount Vernon Hospital (under the late Sir James Mackenzie), London Hospital, and at St. George's Hospital, in coöperation with the late Dr. Arthur Latham. Any value there might be in his conclusions lay in the fact that time had placed them in their proper perspective. As regards general treatment, he considered graduated rest to be more efficacious than graduated labour, and strongly advocated absolute rest in bed for pyrexial cases, his motto being, "Let sleeping dogs lie." He described the tuberculin treatment as practised at Mount Vernon from 1909 onwards. These trials were made for about three and a half years, gradually increasing doses being given subcutaneously and orally, avoiding reaction. It was found that though tuberculin had beneficial effects in cases of tuberculous glands and eye conditions, much the same results were obtained by the injection of any foreign protein. At St. George's Hospital the Spahlinger treatment was tried on specially selected cases. In no pulmonary case did positive sputum become negative; there was no convincing evidence of improvement of lupus after three months' treatment. Surgical cases were equally disappointing. The healing of the ulcer occurred, but the intact nodules were unaffected. This would be noteworthy were it not equally well attained by the injection of either mixed-infection vaccines or peptones. He quoted a case where increasing doses of the latter were administered at weekly intervals to a boy suffering from extensive ulceration of the face and ankles with incredibly satisfactory results. He also referred to his experiences, and their unconvincing results, with mixed-infection vaccines, pneumosan, and intravenous injections of iodoform in ether. He expressed his further disillusionment with Dreyer's vaccine, aurocyanide, and sanocrysin, all of which he had investigated. In fact, he agreed with an eminent bacteriologist who had recently stated that nothing further could be expected from vaccine therapy. Artificial pneumothorax appealed to him as a logical procedure in specially selected cases. Speaking of diagnosis, he urged that all medical students should do "six weeks hard" at a chest hospital before their final examination, and that senior men working in special lines should keep in touch with general work by regular attendance at the out-patient department of a general hospital.

SALFORD ANALYST'S REPORT. — The Salford borough analyst, Mr. S. D. Elsdon, in his annual report for 1924, states that during the year 1700 samples have been submitted for analysis and of these 1544 were taken in connexion with the Sale of Food and Drugs Act, and 156 were submitted by various corporation departments. Of the 1544 samples, 66, or 4·3 per cent., were returned as adulterated, a figure considerably better than that for any year since 1919, when the proportion was 8·8. Of 833 samples of milk, 22, or 2·6 per cent., were returned as adulterated, which figures show that Salford's milk-supply compares not unfavourably with that sold in other districts. All samples of butter examined were found to be genuine, though 18 samples were preserved with boron preservative, equal to 0·3 per cent. as expressed as boric acid in each case. None of the margarine samples was adulterated. Of 55 samples of Cheshire cheese, 6, or 10·9 per cent., were returned as adulterated. Of sausages, in 15·4 per cent. boron preservatives in comparatively large amounts were found. An amount of boric acid which exceeds 2·5 per cent. is undesirable. Of drugs, 10 per cent. were adulterated, chiefly paregoric, turpentine, and almond oil—in the last peach kernel oil being substituted. Of 76 samples of dispensed medicine two were unsatisfactory. In one case the pharmacist was fined, there being a shortage of 20 per cent. of the correct quantity of potassium bromide.

Reviews and Notices of Books.

DENTAL INFECTIONS, ORAL AND SYSTEMIC.

By WESTON A. PRICE, D.D.S., M.S., F.A.C.D. Cleveland, Ohio: Penton Publishing Co. In two volumes. Vol. I., pp. 673; Vol. II., pp. 471.

THESE two volumes of over 1100 pages are devoted entirely to the subject of dental sepsis and its relationship to systemic disease. The book is by far the largest single contribution to this subject and undoubtedly the most important. Though there has been a steady output of literature on dental sepsis since attention was first focused on the subject by Dr. Hunter little more than 20 years ago, we are still far from a complete understanding of the nature of dental sepsis and its results in other parts of the body. Even these volumes, which in their wide scope and thoroughness go far beyond anything hitherto written, still leave the matter in considerable obscurity. They cover a wide field and it is difficult to appraise or even summarise them. Each chapter, or rather essay, discusses a definite problem which is stated at the beginning like a problem of Euclid, and is more or less complete in itself, ending with a brief summary of the evidence. The really remarkable feature of the book is the original investigations carried out by the author. Very many animal experiments have been performed to test the degree of infectivity of organisms from dental lesions under different conditions, and Dr. Price has reached many interesting conclusions. He points out the possible fallacy of judging the degree of dental infection by radiographs. The actual amount of bone-absorption may not be revealed, for it may be concealed by the shadow of the malar bone or hidden by another tooth, or obscured by a more superficial layer of condensing osteitis. He considers that the dental granuloma which so frequently occupies the rarefied apical areas shown in a radiograph, is a defensive membrane which protects the body against the local infection. The protection may sometimes be adequate for a long period. A large area of rarefaction at the end of a tooth may indicate a high defence, whilst an absence of local reaction may indicate a far more dangerous condition. Dr. Price finds that an infected tooth placed beneath the skin of a rabbit tends to become encapsuled and that the membrane round it is histologically indistinguishable from the dental granuloma. It must not be assumed that Dr. Price regards the radiographic evidence of rarefaction as being of negligible significance. What he suggests is that the condemnation of a tooth because of apical rarefaction may not always be necessary, and that the assumption, so often made, that all areas of apical rarefaction represent a serious menace to the general health which is roughly proportional to the degree of the absorption is incorrect. By correlating many factors it is possible within limits to determine the degree of defence of the individual to dental infection. Such infection lowers the ionic calcium of the blood, and the blood-sugar may also be increased. On the question of elective localisation Dr. Price is somewhat guarded, but he finds considerable evidence to support Rosenow's views.

In his second volume he treats of the clinical aspects of focal infection in its relation to diseases of the circulatory, alimentary, nervous, excretory, and other systems. The book is far from being the familiar monotonous record of amazing cures brought about by extraction of infected teeth; the number of cases dealt with is comparatively few, and each one is described in unusual detail. Thus, in a case of myocarditis, not only is the general and cardiac condition fully described, but the dental condition is gone into minutely. The result of inoculation into animals is given, as well as the results of a blood examination before and after dental treatment. This is the ideal method of investigating dental sepsis as a possible cause of a systemic lesion. It is to be feared that it will never become the general method, but the completeness with which Dr. Price has investigated and recorded his cases has provided a most illuminating and helpful commentary. Some of the views put forward are novel and may be regarded as contentious until further investigation has been made; but the value of this book is beyond doubt, and it will probably long remain the fullest exposition of the subject of focal infection in the teeth and jaws —one which no serious student of the subject can afford to ignore. Unfortunately, the extreme length of these volumes may make them a closed book to many. Dr. Price's style is somewhat diffuse and a considerable compression might be effected without in any way impairing the value of the book. The production is admirable and there are nearly 500 illustrations of high technical excellence.

ABDOMINAL SURGERY.

The Early Diagnosis of the Acute Abdomen. Third edition. By ZACHARY COPE, B.A., M.D., M.S. Lond., F.R.C.S. Eng., Senior Surgeon to Out-patients, St. Mary's Hospital, Paddington; late Hunterian Professor and Arris and Gale Lecturer, Royal College of Surgeons of England. London: Humphrey Milford, Oxford University Press. 1925. Pp. 233. 10*s.* 6*d.*

THE fact that a third edition of this little book has been required so shortly after the two impressions of the second edition is proof of its popularity. The general principles of the new edition are the same and but few changes have been made.

The sections on acute pancreatitis and pneumococcal peritonitis have been rewritten, and one of the few errors in the last edition—the statement that the rigidity of the abdomen in cases of acute pancreatitis is more marked than with perforation of the stomach —does not appear. The clinical account of acute pancreatitis is well written and will be helpful to practitioners, but more stress might have been laid upon the fact that the disease occurs in several distinct clinical forms, and too much emphasis is laid upon the presence of a pancreatic tumour and of jaundice. But these are relatively small points. The book as a whole is clear and concise, with useful and practical diagrams.

Chirurgie der Niere und des Harnleiters. By Prof. Dr. J. ISRAEL and Dr. W. ISRAEL. Leipzig: Georg Thieme. 1925. Pp. 584. R.M.36.

THIS is a large book, but it would be difficult to dispense with any of its sections without detracting greatly from its value, for there is an absence of that overlapping all too common in big treatises. Surgical diseases of the kidneys are systematically described, and Prof. Israel gives his views on urological questions with the simplicity that comes from the conviction of truth. An enormous experience has evidently been drawn upon as is shown by the interesting clinical case-histories dispersed through the text. Due acknowledgment is given to workers in countries other than his own. The printing and the illustrations, a number of which are coloured, are excellent. Surgeons engaged in the study of urology will find much of interest in this book.

Pathogénie des Calculs Biliaires et Indications Opératoires. By THORKILD ROVSING, Professeur de Clinique Chirurgicale à l'Université de Copenhague. Paris: Masson et Cie. 1925. Pp. 125. Fr.20.

IN this book Prof. Rovsing is mainly concerned with the causation and treatment of gall-stones. Briefly stated, his conclusions are that they have their origin in the intra-hepatic bile canals and never arise as the result of infection. He thinks it probable that as a result of some transient toxic condition the metabolism of the liver is upset and inspissation of bile occurs; thick soft masses of "calcium bilihumin" are then passed into the gall-bladder, where they serve as nuclei for continuous accretions of cholesterol. The author believes infection to be always secondary to the presence of stones and never their cause. He adduces a wealth of data, both from his own experience and the work of others, but entirely omits to mention one very important piece of evidence in support of his theory, to wit, the almost universal presence of gall-stones—usually unaccompanied by symptoms and in the absence of infection—in cases of acholuric jaundice. Prof. Rovsing is a stalwart opponent of cholecystectomy as opposed to cholecystotomy—he has a disconcerting habit of referring to these operations as "tectomies" and "tomies," respectively—and produces data seeming to show that removal of the gall-sac is no safeguard against the recurrence of gall-stones, and, moreover, providing some grounds for belief that its extirpation may bring about disturbances in the general health. His views are in direct opposition to those of Naunyn, which have gained a wide acceptance: but this acceptance is not quite so general as Prof. Rovsing appears to think. Had Prof. Rovsing omitted polemics from his book, which he might have done with advantage, it would have been considerably shorter and easier to read.

BIO-CHEMISTRY.

Nature of Enzyme Action. Fifth edition. By Sir W. M. BAYLISS, M.A., D.Sc., F.R.S., late Professor of General Physiology, University College. London: Longmans, Green and Co. 1925. Pp. 200. 9*s.*

THIS was the first of a series of "Monographs on Bio-Chemistry," and when it appeared 15 years ago was not a little responsible for the immediate popularity and success of its companion volumes. The present edition was prepared prior to the author's last illness, and we learn from the preface that Sir William Bayliss's daughter completed the corrections after his death. No attempt has been made to add or to remove other than as he wished. It is unnecessary to repeat here what has been said before regarding the clarity of style, the breadth of vision, and the completeness of the material. The subject is treated on the broadest lines, and the detailed description of the properties of a large number of specific enzymes already known finds no place in this monograph, which confines itself to general properties more or less common to enzymes. The reader is given, therefore, a general idea of such properties of enzymes as their physical and chemical nature, methods of preparation, reversibility, mode of action, and so on. Perhaps in a future edition fuller accounts of oxidases and of the glutathione system might be added.

Physical Chemistry, its Bearing on Biology and Medicine. Third edition. By JAMES C. PHILIP, O.B.E., D.Sc., F.R.S., Professor of Physical Chemistry, Imperial College of Science and Technology, London. London: Edward Arnold and Co. 1925. Pp. 367. 8*s.* 6*d.*

THIS book is written with the object of providing the medical and general student with a brief outline of physical chemistry. In this new edition the author has included recent work upon hydrogen-ion concentration, plasmolysis, and permeability, otherwise the general scheme is the same, and in the 14 chapters the reader is taken over the subjects of gases, osmotic pressure, solutions, colloids, and mass action. The treatment is, in every case, clear and explicit; perhaps the best chapter is that on salt solutions, but the exposition of such confusing subjects as specific and equivalent conductivity is particularly lucid. Where all is so good we may yet regret the absence of what might be termed a thermo-dynamic background to the work. Deductions, such as Le Chatelier's theory and Gibb's surface-tension laws, could then have been handled better. There is need for simple, non-mathematical treatment of these subjects, and Prof. Philip is evidently the person to give it. We shall look forward to a thermo-dynamic consideration in the next edition of this useful volume.

ELECTRO-THERAPY AND IONIC MEDICATION.

By HAROLD H. U. CROSS, Ph.D. Med., formerly Research Worker at the Stanford University, California. London: Charles Griffin and Co., Ltd. 1925. Pp. 253. 10*s.* 6*d.*

THIS book is chiefly devoted to the principles and practice of ionisation. Short introductory chapters have been added on high frequency, diathermy, and X rays, and there are also notes on the subject of muscle and nerve testing. The book concludes with a chapter on the electrical treatment of cancer.

The author gives full details for the treatment of suitable diseases by the introduction of ions, and describes some interesting experiments which he has conducted in order to show the migration of metal ions into jelly masses, the depth of penetration being shown by the X rays. His book is written in an interesting and attractive manner. Those who are beginning the study of electro-therapeutics will find a clear and encouraging exposition of the subject of ionic medication, and the experienced reader will find interesting accounts of the treatment of sinuses by a distinctly novel method, and of atony of the uterus by the combined faradic and galvanic currents. He will be surprised to read that the author has obtained good results in the treatment of trigeminal neuralgia by the unidirectional *pulsating* current. It is stated that when solutions for ionisation are being made rain-water or good tap-water can be used, but Dr. Cross insists on distilled water for treatment of wounds or ulcers. Certain statements are somewhat hard to understand—e.g., on p. 95, "The resistance of the tissues is due to their capacity for electro-chemical action more than to mere ohmic considerations." The account of muscle and nerve testing is too short to be of much value, and the definition of partial RD would not be accepted in this country. Nor would the statement on p. 106 that "in cases in which there is no reaction to either current the nerve is evidently divided and surgical interference is required" without qualification and amendment.

SANITATION SUPPLEMENTS OF THE TROPICAL DISEASES BULLETIN.

Supplement No. 2. July 30th, 1925. 3*s.* 6*d.*

THIS supplement contains a subtitle, Applied Hygiene in the Tropics, with the name of Lieut.-Colonel G. E. F. Stammers, R.A.M.C., attached. The supplement covers a very wide range in the headings, including disease prevention, water, food conservancy, small-pox, vaccination, disinfection, child welfare, medical inspection of schools, and industrial hygiene. There follows a section in which reports and vital statistics of various tropical regions are briefly abstracted, and in conclusion several reviews of books on more general subjects. A notice is attached to the Bulletin to say that this series of "Sanitation Supplements" will close with the third supplement, which is to appear on Oct. 30th, and will be replaced by a monthly "Bulletin of Hygiene," the first number of which will be published in January, 1926. This new Bulletin, we are informed, will review in all its aspects the literature of hygiene and preventive medicine with special reference to the needs of the Dominions and the tropical and other colonies and India. Dr. J. F. C. Haslam, late Government medical officer, British Guiana, recently appointed Assistant Director of the Tropical Diseases Bureau, will give most of his time to the Bulletin, and will be responsible for the Section of Applied Hygiene in the Tropics, while for the rest some 35 contributors have undertaken to assist in the provision of material. The subscription rate for the Bulletin will be 21*s.* per annum, and orders may be lodged with the Tropical Diseases Bureau, 23, Endsleigh-gardens, N.W.

JOURNALS.

JOURNAL OF PATHOLOGY AND BACTERIOLOGY. Vol. XXVIII., No. 4. Pp. 541–717. October, 1925.—The Bacteriology of Subacute Infective Endocarditis, by H. D. Wright (London), an important paper which will be made the subject of separate editorial comment. —Effect of Hæmorrhage on the Hæmolytic Titre of the Serum of Rabbits, by J. Mills (Cambridge). Rabbits immunised against sheep corpuscles were bled and the hæmolytic titre of their blood compared with its content in hæmoglobin. The two usually run parallel. Hence, either the tissue fluids from which the blood volume is made up after a bleeding contain no hæmolysin or the capillary wall is not permeable to it.—Complement Fixation with Bilharzia, by N. H. Fairley (Bombay). The active substance in worm extracts is lipoidal not protein in nature.—The Normal Weight of the Human Thymus, by A. B. Bratton (London). See p. 931.—Liver Necrosis and Cirrhosis produced Experimentally by Coal-Tar, by J. Davidson (Edinburgh). Tar painted on the skin or injected subcutaneously in rabbits causes necrosis similar to acute yellow atrophy; this may be followed by cirrhosis.—The Early Phases of Cell Injury, by J. Lorrain Smith and T. Rettie (Edinburgh). Cloudy swelling and necrosis however produced (ether, chloroform, acidosis, &c.) always show first in changes in the mitochondria.—Tuberculous Guinea-pigs and Diaplyte Tubercle Vaccination, by J. S. C. Douglas, J. W. Edington, and F. W. Simson (Sheffield). No effect on the course, extent, or duration of the experimental disease was produced by Dreyer's vaccine.—The Blood Cells of the Rabbit after Splenectomy, by R. H. Mole (Liverpool). Removal of the spleen causes a decrease of red corpuscles followed after several weeks by an increase to more than the normal number.—Observations on the Action of the Convulsant Thujone, by H. Florey (Cambridge). A pharmacological study of the active principle in absinthe.—The Preservation of Testes for Transplantation in Rabbits and Dogs, by N. M. Shustrov, S. G. Karpova, and I. V. Tikhomirov (Moscow). Rabbits' testicles may be transplanted effectively after five days in cold Ringer's solution.—Diphtheria Toxin-antitoxin Flocculation (Ramon Test), by P. J. Moloney and C. B. Wild (Toronto). The Ramon method for titrating toxin and antitoxin in vitro does well for rough tests, but there are many discrepancies between its results and those of guinea-pig tests which it cannot replace. The nature of the flocculation is not understood; it seems to have some relation to the agglutination of the bacilli.—Apparatus for Obtaining Plate Cultures of Anaerobes, by W. J. Wilson (Belfast).—Coliform Organisms in the Trachea, by N. D. Ball (London). Present in 55 of 70 unselected post mortems. Friedländer's bacillus was found eight times; the different strains failed to show any cross-agglutination.—Unusual Serum Agglutination in Typhoid Fever, by J. F. Taylor (London). Agglutinated paratyphoid A to an unusual degree.—Variation in Platelet Count after Splenectomy in Acholuric Jaundice, by S. C. Dyke (Wolverhampton). The rise and subsequent fall in the number of platelets had no relation to changes in red cells or leucocytes.—The Obituary Notices of Deceased Members (12 in number) include Two Interesting Accounts of the Early History of Bacteriology as Notices of Dr. E. Klein (1844–95), by Prof. W. Bulloch, and of Prof. C. J. Salomonsen (1847–1924), by Prof. T. Madsen.—Books received.—Annual indexes.

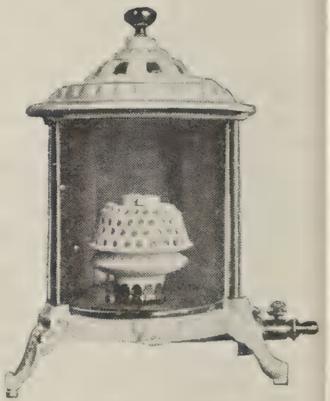
JOURNAL OF PHYSIOLOGY. Vol. LX., No. 3. 1925. The Effect on Muscle Contraction of Sympathetic Stimulation and of Various Modifications of Conditions. By Helene Wastl. The question whether the sympathetic system has any direct influence upon striated muscle has been widely discussed during the last ten years. Many observers who have supported the theory that such influence exists have considered that it consists of an increase of some form of tonic contraction. So far, however, no one has been able to cause increase of muscle tone by stimulating the peripheral end of any sympathetic nerve. Other observers consider that if a muscle is fatigued its activity is more or less restored by stimulating the sympathetic—i.e., that the sympathetic has all the effects on striated muscle that it has on the heart. The author carried out a number of experiments on anæsthetised cats, but no evidence was found that the sympathetic nervous system affects striated muscle, except by modifying the circulation.—The Effect of Changes in Venous Blood Pressure on the Rate of Flow Through, and the Gaseous Metabolism of the Kidney. By E. W. H. Cruickshank and K. Takeuchi. The experiments were carried out on cats under urethane anæsthesia. An increase in the venous pressures in the renal veins produces a proportionate decrease in the blood flow through the kidneys, with an increase in oxygen used per c.cm. of blood. An increase in venous pressure up to 100 per cent. does not necessarily render the kidney anoxæmic ; this is shown by the average figures for oxygen percentage saturation at the end of the experiments—viz., arterial blood 88·8 per cent., venous blood from the kidney, 69·9 per cent. For a certain time, varying from one to two hours, the kidneys under conditions of increased venous pressure amounting to about 50 to 100 per cent. utilise an amount of oxygen per c.cm. of blood, which, in relation to the blood flow, gives a constant utilisation of oxygen per minute.—The Relation of the Thyroid Gland to the Action of Insulin. By J. H. Burn and H. P. Marks. Thyroidectomy diminishes the hyperglycæmic reaction to adrenalin and increases the hypoglycæmic reaction to insulin. Thyroid feeding, so long as the glycogen store in the liver is not diminished, increases the hyperglycæmic reaction to adrenalin and decreases the hypoglycæmic reaction to insulin. When, as a result of prolonged thyroid feeding, the liver glycogen disappears, the hyperglycæmic reaction to adrenalin diminishes and the hypoglycæmic reaction to insulin increases.—On the Effect of Adrenalin on the Respiratory Centre. By Yas Kuno. Adrenalin, as known, produces apnœa by causing complete cessation of respiratory movements. From experiments on rabbits the author concludes that adrenalin does not cause apnœa by constricting the cerebral vessels, but partly by increasing the cerebral blood flow and washing out CO_2, and partly by a direct action on the nerve-cells of the respiratory centre.—On the Production of Anhydræmia with Insulin. By David L. Drabkin. Large doses of insulin in dogs cause a rapid increment in the percentage of hæmoglobin (14·5–44·2 per cent.), a great increase in the cell count, a decrease in the total blood volume, a reduction in the percentage of plasma, and also physical evidence of blood dehydration—increased viscosity and apparent anoxæmia. After large doses of insulin, associated with a rapid, pronounced hypoglycæmia, dogs invariably developed anhydræmia. Unæsthetised rabbits were irregular in their response and were found to be ill-adapted for such a study. The use of "mass" doses of insulin is essential in this type of experiment. The sudden profound hypoglycæmia—the virtual purging of the blood of its sugar—is thought to be the primary cause of the anhydræmia.—The Relation of Ovarian Function to Menstruation. By Wilfred Shaw. After a short account of the work done by other observers, the author describes first his own histological results obtained by the examination of curettings from patients who were menstruating regularly, and from some 40 specimens of the non-pathological endometrium of uteri removed by operation. Evidence suggests that the corpus luteum is responsible for the production of the pre-menstrual changes and of the decidua if pregnancy occurs.—The Relation Between the Size of the Heart and the Oxygen-Content of the Arterial Blood. By K. Takeuchi. It is known that a sufficient degree of anoxæmia produces cardiac dilatation. The experiments were made on cats anæsthetised with urethane and C.E. The chest was opened, artificial respiration maintained, and the inspired air varied in composition in four periods. Cinematograph pictures were taken of the heart beating at each period of the experiments, enlarged and measured in length, width, and area of the hearts. The percentage saturation of oxygen was determined in blood samples taken from the carotid at each period. It was found that the reduction of oxygen in the air breathed produces immediate enlargement of the heart. The readministration produces immediate reduction.—M. L. Anson and A. E. Mirsky contribute two chemical papers, one on Hæm in Nature, and the other on Helicorubin and its Relation to Hæmoglobin. By hæm is meant an iron-pyrol complex associated with a proteid in such compounds as hæmoglobin and hæmochromogen. Hæm is constantly and widely distributed in nature—e.g., hæmoglobin in the blood of all vertebrates—in a haphazard fashion, and a number of natural pigments are related to it. Helicorubin was discovered in 1876 by Sorby in the large snail *Helix aspera*. Its properties, affinities, and composition are described ; its properties seem to be adaptations to the acid medium of the snail's gut in which it is found. Its function is unknown.

The other papers are : The Pulmonary Circulation in the Heart-Lung Preparation (Dog), by G. V. Anrep and E. Bulatao ; The Double Innervation of the M. gastrocnemius, by S. de Boer ; The Effect of Pituitary Extract on the Secretions and Composition of the Urine, by Raymond L. Stehle and Wesley Bourne ; and a description of a new apparatus designed for the study of the conditions of respiration with the chest open, by K. Takeuchi, whereby artificial respiration can be maintained for nine hours or more with the chest open, without producing emphysema and which does not cause more than a trivial decrease in the oxygen saturation of the arterial blood.

New Inventions.

THE LEWCO STOVE.

THIS small circular portable gas stove has been devised for warming a room. The dimensions—12 in. high and a diameter of 8½ in.—allow of it being placed on a table or other convenient place. The external part of the stove is cast iron enamelled ; it is provided with a copper reflector on the base and on half the circumference. The cover can be lifted off, and a heating surface is thus provided which may be used for boiling a kettle. The burner is a truncated cone of fine fire-clay in two parts, and so constructed that the heat is evenly distributed. There is no contact between metal and non-luminous flame. The arrangements for altering the pressure of gas and controlling the entry of air are simple and efficacious.



The stove has been tested by us to see if combustion of the gas was complete. The products of such combustion were collected, and on careful tests being made with blood no trace of carbon monoxide was found. It may therefore be used with safety in a well-ventilated room, always provided that the admixture of gas and air is correctly adjusted. We have here a practical and ingenious piece of apparatus of considerable use for a variety of purposes. The price is 35*s.* complete, in various colours, and it can be obtained from the Provincial Manufacturing Company, 12 and 13, Henrietta-street, London, W.C.

THE LANCET.

LONDON: SATURDAY, OCTOBER 31, 1925.

WALES AND ITS MEDICAL SCHOOL.

As was noted in our columns last week, a further stage in the controversy regarding the government of the Welsh National School of Medicine was reached at a meeting of the Court of the University of Wales at Llandrindod on Oct. 16th, when, on the proposition of Alderman William George, a resolution was passed by 71 votes to 41 expressing the opinion that the School should be constitued as an independent school of the University and resolving that His Majesty in Council should be petitioned for a charter to bring this about.

The controversy is of some standing, and the salient points may not be within the recollection of all. In 1916 a Royal Commission, presided over by Lord Haldane and composed of many distinguished educationists, unanimously recommended that the School should be a separate entity of the University of Wales. This course was not followed, and in 1921 the complete School was established as a part of the University College of South Wales and Monmouthshire at Cardiff, with special arrangements, including the formation of a board of medicine to administer the School under the Council and Governors of the Cardiff College. A draft supplemental charter to ratify these arrangements was submitted by the Cardiff College to the Privy Council, which rejected it, and affirmed the recommendations of the Haldane Commission. As the College did not agree, the Privy Council referred the question to the University, which through its Council recommended a school directly under the University and submitted a draft scheme to the Privy Council. Approval of such a scheme has now been obtained from the Court, the governing body of the University, at its Llandrindod meeting. The advocates of an independent school separated from the Cardiff College contend that thereby the School will be truly national, its prestige greater, its administration simplified, and its financial support larger and more assured. Those against separation from the College point out the advantages to medical staff and students of College association and stress the difficulties of separation as regards land, buildings, and money. A very animated discussion, which lasted most of the day, took place at the Llandrindod meeting. Members of the Court had already received a considerable amount of literature which included, as expressing outside opinion, statements from Sir Charles Sherrington and Sir Thomas Lewis in favour of separation and from Prof. Adami against it. The arguments employed by the opponents to the policy of separation have been summarised in the frank statement circulated from the Vice-Chancellor of the University of Liverpool, and while admitting that on the constitution and conduct of universities he must be considered a first-class authority, we do not find the views of those who think with him broadly correct on general principles. Under the policy of separation it should be realised that the University connexion will be retained. Further, the apprehension that the other constituent Colleges of the University will be led to the burden of starting departments of anatomy and physiology out of rivalry to Cardiff seems to be far-fetched, for the number of students requiring courses on these subjects but not wishing even to enter the medical school of the University can hardly be large enough to warrant any dissipation of energy.

We have nothing but sympathy with the aspirations of Wales to establish a good medical school, and our sympathy is extended also to the Cardiff College which founded the School and naturally desires to keep it. A school of medicine, however, with its associated hospital organisations (and it is to be noted the Cardiff Royal Infirmary is in favour of separation) is too big a thing for a single university college to manage. The opinions and desires of the Royal Commission and Privy Council must carry weight. Association of staff and students cannot be forced; it will come naturally by work in institutions situated side by side. Only by an untrammelled and simplified administration can the School realise itself and develop on the best lines in the future. Granted goodwill on all sides, which should be forthcoming, disentanglement of mutual possessions should be a simple matter, especially as school properties are only held on trust by the Cardiff College and it has no power to deviate them from school purposes. We are of opinion that only by the constitution proposed by the University of Wales will the School undergo proper development and become not only a national but an international institution for medical education and research.

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THE ÆTIOLOGY OF ECLAMPSIA.

Physico-chemical methods are continually being applied to the medical sciences, and the harvest which is being reaped as a result of this application is of significantly ingravescent magnitude. It may be regarded as an axiom that every principle involving the inorganic world will ultimately be involved in the attempt at a rational interpretation of the organic. As long ago as 1690 Huygens, when studying the refraction of light through a crystal of Iceland spar, discovered the fact of plane polarisation. Over a century later Arago noticed that when a plate of calcite cut in a plane perpendicular to the axis was placed in the beam of light traversing a path between two crossed nicols, no rays passed the analyser. If, however, a plate of quartz were substituted for the calcite, part of the beam of light was transmitted. Evidently the plate of quartz had rotated the plane of polarisation which had been impressed on the light-waves during their passage through the first nicol. Some substances were found to rotate the plane in a clockwise, others in an anticlockwise direction, and were consequently given the names dextrorotatory and lævorotatory. A more puzzling phenomenon was brought to light when it was found that certain liquids—e.g., turpentine—also produced rotating polarisation and that this power was not lost even when the substance was in the state of vapour. Clearly the phenomenon was one intimately connected with the structure of the individual molecules. Solutions of some substances likewise exhibit this phenomenon, and the fact that the degree of rotation is proportional to the concentration of solute at once gives the possibility of quantitative analysis to this principle. If two or more rotatory substances are in solution together, then the degree of rotation is the algebraical sum of their individual rotations when separately investigated in the same concentrations. The application of these principles, as is well known, has been of great industrial value in the determination of sugar and is also made use of extensively in the estimation of sugar in biological fluids.

We publish in this issue a paper by Dr. Alexander Hynd on some preliminary experiments on the nature of urinary protein, in which the principle of rotatory polarisation is invoked. Some extremely interesting facts have come to light. Investigation of the rotatory power of the urine from a case of eclampsia showed that this was considerably less lævorotatory than would have been expected from the amount of protein present and from the assumption that the protein present was serum albumin. This result led to a more careful and systematic investigation of the rotatory power of the carefully purified albumin obtained from the urines of 12 cases of albuminuria of pregnancy (without convulsions) and of 14 cases of eclampsia. Five cases of proteinuria not complicated by pregnancy were similarly studied. In all the cases of albuminuria of pregnancy without convulsions the specific rotation of the urinary albumin ranged from –48·9° to –65·7°, with a mean value of –55·81°, a figure which agrees extremely well with the mean value of the specific rotation of the albumin excreted by the five cases of proteinuria uncomplicated by pregnancy, viz., –54·27°. Since the specific rotation of human serum albumin prepared by a process exactly similar to that employed in the purification of the urinary albumin gave a value which approximated closely to those given above, one is tempted to conclude that the albumin excreted in these conditions is serum albumin, a tentative conclusion which agrees with the commonly accepted view.

In the cases diagnosed as eclampsia, however, the rotatory power of the urinary albumin is in many instances much below the serum albumin figure and warrants a division of the series into a high and a low rotatory group. The specific rotation in the latter group varied between the limits of –33·92° to –41·61°, with a mean value of –38·5°; that in the former between –49·4° and –58·67°, with a mean value of –56·37°, a figure agreeing closely with that of serum albumin. Dr. Hynd shows that cow's lactalbumin has a specific rotatory power of –41·17°. The figure for human lactalbumin would probably be of like magnitude, and "it would seem," he says, "a significant fact that while in no case of proteinuria uncomplicated by pregnancy, nor in 'albuminuria of pregnancy' *without* convulsions, has an abnormally low specific rotation for the urinary albumin been observed, in a large percentage of the eclamptic cases the albumin excreted in the urine is considerably less lævorotatory than serum albumin. Experiments have been in progress to determine the nature of this low optically active urinary albumin, but owing to the difficulty of obtaining material suitable for such investigation, so far no definite conclusion has been come to, and further work will be necessary. The value of the specific rotation, however, suggests that the albumin may be lactalbumin." If this suggestion be accepted, "we have in certain cases of eclampsia an analogous condition to the lactosuria which not infrequently occurs in the late months of pregnancy or soon after labour, while corresponding to the symptomless albuminurias of pregnancy there exists the fairly common glycosuria of pregnancy. However, while the presence of lactose in the blood and its excretion in the urine would do little or no harm to a patient, the presence in the blood-stream of lactalbumin, which must be regarded as a foreign protein, might entail great danger." The suggestion is tentatively promoted that eclampsia is the symptomatic expression of a supersensitiveness to lactalbumin and is essentially of an anaphylactic nature.

We shall look forward with interest to the results of a more extensive investigation on the nature and origin of the urinary protein in eclampsia, and to the effect which these will inevitably produce on the fascinating suggestions made in Dr. Hynd's paper as the result of his preliminary and carefully conducted experiments

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MALARIA AND AGRICULTURE IN BENGAL.

A report[1] to the Government of Bengal, on malaria in relation to agricultural conditions in that province, by Dr. C. A. Bentley, Director of Public Health, raises questions of general interest no less than of vital local importance. The report urges that the Gangetic Delta depends both for prosperity and health on annual inundation, which leaves on the land a deposit of fertilising silt, and hinders anopheline breeding during many weeks of otherwise favourable conditions. Nevertheless the very circumstances which bring richness to the land tend to its decay; for with each annual flood the layer of fertilising silt, while deposited broadcast, yet reaches its greatest depth close to the river banks, so that natural embankments are there formed over which the normal annual flood finally fails to escape. During flooding, silt is also deposited in the river beds themselves, whence however it is ordinarily scoured out, for the now clarified flood water drains back into them as the river level falls. If this process do not occur, such waterways are left, in the dry season, choked, stagnant, and dead. This condition, as would be expected, is most advanced about the apex of the Gangetic Delta where land is extensively derelict, wild and cultivated vegetation indicate soil drought, and malaria is excessive. It is, moreover, held that this natural decay of the Bengal river system is accelerated by embanking the rivers, and is intensified by the building of thousands of miles of raised roads and railways; for—and the point is stressed—embankments of this kind, fallow land, and malaria are all more abundant in Western than in Eastern Bengal; thus it is definitely concluded that such embanking is the cause both of the existing agricultural depression and of malaria. Among examples is cited the Hoogly district, where embankment of the left or eastern bank of the Damodar has prevented the river from spilling eastwards across that district into the Hoogly river, the westernmost of the stream of the Gangetic Delta. Crop experiments have shown that the average out-turn of the rice plant is greater by half when irrigated by Damodar water than when not so irrigated, while the Hoogly district is now one of the most malarious in the province, to which condition is also largely attributable the fact that its population in 1921 was less than in 1872. Further, comparatively healthy Eastern Bengal, which is yearly flooded, has, relative to area, 28 per cent. of the railway and 6 per cent. of the road mileage of the more malarious Western Bengal. It is therefore argued in the report that, to prevent extension of malaria in the Delta, normal inundation must be encouraged by maintenance of channels and spill areas, and by absolute prohibition of all embankments, including those of railways and roads, until these can be constructed without obstructing natural irrigation and drainage. In the meantime the effects of embankments upon the water table should be investigated and a survey should be made of malarial distribution, of agricultural conditions, and of the various water-courses, drainage maps of the district being prepared.

These recommendations lead naturally to a scrutiny of the proffered evidence that embankments of these various kinds have indeed caused the ills attributed to them. That the actual process of embanking may induce temporary malarial outbreaks is unquestionable; that completed embankments have permanently altered the health of Bengal is admittedly difficult to prove, or disprove; but the evidence offered for their harmfulness appears too little convincing. It is, of course, clear that embankments for rivers, roads, and railways will be built preponderatingly upon those upper parts of the Delta which have nearly, or actually, become raised above ordinary flood level, and where flooding is felt to do more economic harm than good. These higher tracts may be taken as evidence that land is permanently emerging from the waters and that hydraulic conditions are being radically altered. It will surely be felt by many, in spite of the facts cited in this Report, that there is still no answer to the following question: "To what extent is this natural alteration, with its concomitant agricultural and hygienic deterioration, aggravated by man's efforts?" There are undoubtedly those who are satisfied that there is another side to the whole question. Witness the Damodar embankment, just cited, and to which the ill-health of the Hoogly district has been referred. No one who has looked out daily for months upon a pleasant midstream island in a big Indian river and has awakened one monsoon morning to unbroken wastes of rushing water—a deep channel where palms and huts stood the evening before—can ever leave out of count the well-established vagaries of rivers on Indian alluvial land; so that it is difficult to reject as ill informed the definitely held opinion that the main current of an unembanked Damodar river, diverted in the usual freakish manner, might readily follow the example of other well-known rivers, scour out one of its numerous spill channels across the few miles of intervening Hoogly district, and enter the Hoogly river above, instead of below, Calcutta. The existing river bed could not hold both waters; the damage entailed to the city and port of Calcutta none can estimate. Bonification, carried to its greatest success in Italy, is defined in the Report as the regulation of all surface waters, the improvement of soil fertility, the cultivation of crops best suited to local conditions, and the increase in numbers and prosperity of the population. Dr. Swellengrebel, in an appendix to the report to the League of Nations of its Malaria Commission upon a European tour of investigation in 1924, describes Italian *bonificazione* as comprising the measures of social hygiene taken to improve the hygienic condition of the inhabitants, to increase their well-being and ultimately their resistance to malaria; sanitary ends are gained by economic measures. He adds, however, that the problem of housing is given constant attention, and that the difference between districts completely "bonified" and those untreated or only partly so was much more evident in the condition of human habitations than in the amount of anophelism, which was not appreciably different. The value of housing is in the forefront of the Malaria Commission's representation. The Commissioners class as "primary," and always indispensable, antimalarial measures those limited to malaria-infected individuals and the houses in which they dwell, and they include among them the discovery and full treatment of all cases of malaria by house-to-house inspection, and the instruction of inhabitants in their homes as to where mosquitoes are to be found, how they are to be caught, discouraged, and repelled.

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[1] Calcutta: Bengal Secretariat Book Depôt. 1925. 4s.

Full of promise, then, for Bengal, as Dr. Bentley notes, is Rai Gopal Chundra Chatterji Bahadur's movement for the formation of coöperative antimalarial societies; and more than good wishes are his due in an uphill fight. Based largely, no doubt, on experience of Algeria, where a pestilent, avoided region has become a reasonably healthy one of intensive cultivation with scarce room for another blade of grass, as is picturesquely said, the view is becoming evident in French literature that the best way to exterminate malaria is to improve well-being, and that good administration can pre-eminently aid this. It is, however, well to keep in mind the extraordinary effects produced in the Malay Federated States—associated with the name of Sir Malcolm Watson—which have followed intensive study of the conditions which favour the breeding of the particular anopheline species locally implicated in malarial transmission. In agreement perhaps with Colonel Fry's report, written in 1914, that, since all Bengal anopheles have similar breeding habits, identification of the species acting as optimum host is merely of academic interest, the present report holds no mention of "species sanitation." It is becoming widely held elsewhere that identification of implicated species promises well for future preventive work. No later work on these lines than Fry's is traceable in Bengal, and it is difficult to believe that species with identical habits are implicated in the different conditions of Western and Eastern Bengal. Fry dealt only with Western Bengal and wrote "It would appear that different factors concerned in malaria production and maintenance . . . inextricably overshadow each other." It follows that only by future patient extrication of the tangle can that scientific lead be given to the administration without which its efforts at social and hygienic amelioration must prove risky, expensive, and, not improbably, futile.

SURGICAL DEVOLUTION.

In his Presidential Address to the Section of Surgery of the Royal Society of Medicine, which we report on another page, Sir Lenthal Cheatle was both stimulating and inspiring. He took for his text the thesis: Surgeons in London are in danger of losing their place as leaders of surgical thought—and, without affirming or denying it, he admitted danger and suggested how to meet it. Real leaders in surgical thought are necessarily few in number and they may crop up anywhere. The London routine of surgical training can hardly alter one way or the other what is essentially a biological phenomenon, but Sir Lenthal Cheatle touched the spot when he said that the leaders of surgery, if they are to lead, must always have before them the ideal of investigating. Surgical technique in particular cases—e.g., appendicitis—has been developed to such a point that nine out of ten patients can be operated upon nearly as efficiently by the less experienced as by the more skilled surgeon. Much of what may be called routine surgery is done in present circumstances by operators in outlying districts who may be general practitioners. This is the natural result of the opportunities for surgery offered in the schools to house surgeons and others, but the operating practitioner does no more than follow accepted surgical teaching. Leadership involves work on problems more difficult than these and something more than mere technique. The surgical leader must be a thinker and an investigator. Sir Lenthal Cheatle believes that surgical specialisation has been carried too far, and in this he has the support of a brother-surgeon who holds that patients should only be segregated out of the general surgical ward so long as interest is focused on the particular region or the particular morbid condition; investigation being complete and the lines of treatment settled, they resume their beds in the general ward. The good general surgeon is probably now in every way as good as he has ever been, and it is not difficult for him to acquire some special things, such as cystoscopic technique, whereas the specialist can only extend the area of his special subject with difficulty. Happily, the standard of work at a teaching hospital is constantly kept up not only by the collaboration of colleagues, but by the insistent criticism of students. The surgeon, like any other craftsman, may be inclined to magnify the importance of technical ability, and technique is more important in surgery than it is in any other faculty, but the judgment born of experience and wide contacts is as important for the right handling of the individual case as it is for the advancement of the science. One who is only a clinical surgeon and nothing more cannot hold a position as leader in his profession. We are sure that Sir Lenthal Cheatle's address will do good. He has put into measured words thoughts which have been exercising the minds of surgeons for many years past, and if his remarks should lead to some searching of heart, nothing but good can come from it.

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AN ENCYCLOPÆDIA OF INDUSTRIAL HYGIENE.

The first two brochures have reached us of the "Encyclopædia of Industrial Hygiene," which is being brought out under the title Occupation and Health by the International Labour Office at Geneva. The object of the work is to disseminate as widely as possible the information required for the detection of occupational diseases, to indicate the steps to be taken for their cure and prevention, and to lay down general principles for the better protection of the workers. It is intended not merely for industrial physicians, who must find it a standard work of reference, but for workers, manufacturers, and their organisations. Consideration is given to the work, the worker, and his environment. The work is analysed according to process and risk. The worker is envisaged in relation to the products with which he is in contact. Environment is concerned with such matters as ventilation, lighting, dust removal, and sanitary accommodation. The importance of such an international publication can hardly be overestimated to-day, when matters of industrial legislation, aimed at establishing health in occupations, are so much to the front in every civilised country. The list of expert collaborators who are engaged upon its production, chosen from France, Britain, Austria, Belgium, Germany, Italy, United States, Switzerland, Holland, Sweden, Spain and Poland, is sufficient to vouch for the authenticity of the articles which are all submitted for comment to a correspondence committee before issue. The encyclopædia is appearing in two languages, French and English. The first two brochures contain 12 articles dealing with definite industrial poisons, such as mercury, carbon monoxide, phosphorus, and benzene; one concerned with hatters furriers' processes is well illustrated, and each contains a useful bibliography. The price (£1 12*s.*) charged for the total issue, which promises to be an extensive work, is such as should appeal to a wide circle of readers. We tender our congratulations to the International Labour Office for undertaking this useful and important piece of work.

Annotations.

"Ne quid nimis."

THE ECONOMIC ASPECT OF SMOKE.

At the Plymouth Gas Conference on Oct. 21st Dr. R. Veitch Clark, medical officer of health for Manchester, made an important pronouncement on the conservation of human energy from the point of view of smoke pollution. The gloom which envelops the great industrial belts of England and Wales during the winter months is due very largely to pollution of the atmosphere with the products of combustion of raw coal, and even in the height of summer the Manchester sun records only slightly exceed the winter records of such places as Southport, Brighton, and Eastbourne. Dr. Clark does not claim that the abolition of the smoke evil will abolish even one disease, but he does insist that it will greatly diminish the incidence of disease and produce enhanced efficiency in adult life. There are few who do not react to the depression of atmospheric dinginess, and the Industrial Fatigue Research Board has demonstrated the diminished output of work when lighting conditions are bad. Dr. Clark, as did our Berlin correspondent last week, drives his attack home through the atmospheric envelope to the personal envelope, remarking that ultra-violet rays will not pass through clothing. He regrets that man, particularly male man, does not adapt his costume more sensibly to climatic conditions. Prof. J. B. Cohen and Dr. A. G. Ruston, in a new and enlarged edition of their book on "Smoke,"[1] think that the effect of smoke on health will have to be clearly proved before the Ministry of Health, for example, will take any steps. Without entering into the question of health, however, save to include a rather unsatisfactory appendix containing certain statistics by Dr. Ascher, of Hamm, Westphalia, these authors have brought forward a startling indictment of smoke in their account of the ravages for which it is responsible on vegetation, metal work, and masonry. The fact that the crumbling of the House of Commons is due to the effects of products of inefficient combustion of coal in London air may perhaps bring legislation a little nearer. Domestic soot is particularly deleterious in its effects on vegetation, for the high percentage of tar it contains makes it more adhesive, and soot affects the growth of plants by blocking up the stomata and impeding transpiration, by reducing the intensity of sunlight absorbed by the leaves, and by the corrosive action of the acid it contains. The effect of soot on crops has been studied both in the laboratory and in carefully planned field experiments. One crop of lettuces, for example, grown in the centre of the industrial part of the city of Leeds, was only a quarter of that obtained in an outlying agricultural area. By special methods these authors showed that the smoke cloud over the industrial part of Leeds shuts out 40 per cent. of the daylight, and with regard to the effect of soot on the laundry bill they quote figures which indicate that a big town in the north of England would save about £250,000 a year in household washing expenses if only the city smoke were eliminated. The deleterious effects of smoke on masonry and metal work are due principally to the presence in the air of towns of sulphuric and sulphurous acids derived from the coal. The action of such acids upon all stones having lime or magnesia in their composition is rapid and progressive. Striking illustrations of this are shown in this book, including photographs of portions of the masonry of certain public buildings. In this connexion Sir Frank Baines has asserted that H.M. Office of Works would save at least £120,000 per annum if the air in towns were as clear and as pure as in rural districts.

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[1] Smoke: A Study of Town Air. New and enlarged edition. London: Edward Arnold and Co. 1925. Pp. 108. 8*s.* 6*d.*

Prof. Cohen and Dr. Ruston have certainly collected an imposing list of crimes for which smoke is responsible, and it is surely a matter which affects the public weal so closely that interference by the authorities, even although this means tampering with the home fires, would be a thoroughly justifiable procedure. Dr. Cox has, however, been quoted as saying that it may require the death from fog of three Cabinet Ministers before any action is taken.

PROGNOSIS IN BILATERAL BREAST CANCER.

WE reviewed last week Mr. Grey Turner's incitement to encouragement in cancer surgery, and no one reading his book can take a gloomy view of surgical intervention for tumours in many localities. There is a widely held opinion that when cancer involves both breasts the prognosis in regard to cure, or even marked prolongation of life, by operation is almost hopeless. This outlook is combated by Dr. Clarence A. McWilliams,[1] who records the results in 98 cases of bilateral breast cancer, of which 87 cases had cancer developing consecutively and 11 cases in which cancer developed simultaneously in both breasts. He calculates, from grouped statistics, that of patients with operable cancer in one breast 5 per cent. will develop cancer in the remaining breast. Of the 11 cases of simultaneous cancer only one lived longer than four years after operation. But of the 87 consecutive cases 54 per cent. after the first operation and 24 per cent. after the second operation lived for five years. McWilliams considers, from these figures, that in the simultaneous cases the prognosis is practically hopeless, but in the consecutive cases very fair. In the consecutive cases he regards the growth in the second breast as primary, and not an extension or a metastasis from the growth in the first breast, and gives good reasons for his belief.

NATIVE DIETS.

THE problems of diet are still very much under discussion at the present day, and among the many theories put forward to explain this or that defect in the health of civilised man is the superficially attractive one that his diet has also become much too civilised. The alleged freedom of the primitive tribes from cancer, for example, is ascribed by enthusiasts variously to their simple foods, to the small amount of cooking employed, or to the absence in certain cases of meat in their dietaries. In this respect information as to what the primitive tribes actually do eat and what effect, if any, their diet has upon their general health and well-being is certainly needed. A recent discussion on native diets reported in the *Kenya Medical Journal* (August, 1925) brings out many interesting points. Dr. C. J. Wilson, who opened the discussion, attempted to answer the two principal questions brought up by this subject—namely, What do the natives of Kenya eat? and What ought they to eat? The natives in the reserve live upon a diet described as being on the border-line of food deficiency, being preponderant in carbohydrates with meat in some form as, at any rate, an occasional part. Such a low diet appears to render the native more susceptible to disease than the well-nourished individual and unable to cope with hard manual labour. In connexion with the Carrier Corps (the native labour employed during the war), in certain of the native prisons and with some business concerns employing native labour, actual diets have been worked out and adjusted so as to get the best results. One such diet which proved very satisfactory consisted of 2 lb. of mealie meal daily, 2 lb. of chiroko beans weekly, 2 lb. of meat weekly, and one lemon weekly. The difficulty facing anyone dealing with natives whose staple food consists largely of maize is to get sufficient protein of biological value into the daily diet since the proteins in maize are very low in the scale—2 lb. of maize, for example, contain excess of carbohydrate and only about half of what is conceived to be the minimum amount of protein according to European standards. The difficulty immediately arises that most of the known facts on diet have been worked out on Europeans or Americans. Does the native need meat? In the opinion of one of the subsequent speakers all the tribes need meat if they are going to keep fit for hard work, and he quoted in support of this contention the fact that a certain company giving the diet detailed above to the natives in its employ was quite sure that "their boys worked better with it." Another speaker stated that every contractor for some railway construction work "gave his boys meat because it cheered them up," and on a liberal diet containing meat there was stated to be an improvement in health and in capacity for work. It may be argued that the diet to which a native is accustomed is the best diet for him, but the experience of the acting Chief Native Commissioner, Colonel Watkins, who took part in the discussion, was that the native must be trained to take a better diet, for this, it was urged, would make him more adaptable to changes in surroundings and climate and more resistant to disease. The Chairman, closing the discussion, brought forward some significant figures which showed that on a rough estimate the result of an improved diet at a Carrier Corps hospital was to lower the death-rate from 33 to 3 per cent. It will be interesting to see if the improved diets of the primitive tribes will in any way approximate to the simple diets to which civilised man is sometimes advised to return.

THE TARGOWLA REACTION FOR SYPHILIS.

MOST of the modifications made in the original technique of the Wassermann reaction have had simplification as their object, but even the simplest of the reputable variations is beyond the time and experience of the general practitioner. If, then, a simple test for syphilis could be found its value for the busy practitioner would be great, but though there have been many such suggested they have all been rejected as useless. The reaction introduced by Targowla in 1923 did not apparently receive much attention in this country, but an investigation of its value in 200 cases of syphilis by Bernard and Ruelle[1] has produced some striking results. This reaction depends upon the curious fact that mixture of normal cerebro-spinal fluid and "elixir paregoric" produces a colloidal suspension, while with certain pathological fluids a precipitate is formed. The "elixir paregoric" of the Belgian Pharmacopœia contains tincture of opium, 50 g.; benzoic acid, 5 g.; camphor, 3 g.; anethol, 2 g.; and 70 per cent. spirit, 940 g. Fifteen drops of this are mixed with five drops of water and 15 drops of cerebro-spinal fluid in a test-tube, while a control tube contains 20 drops of water and 15 drops of elixir. At the end of 24 hours there is either more or less precipitation in the first tube (a positive reaction), or no precipitate at all (a negative reaction). The positive reaction is said to be given in cases of cerebro-spinal syphilis and in disseminated sclerosis only, and in 100 cases investigated by Targowla the parallelism between this reaction and the Wassermann reaction was complete in 91 cases. In six of the remainder, all cases of undoubted syphilitic infection (general paralysis, meningitis, and congenital syphilis), the Targowla reaction was positive and the Wassermann reaction negative. In the other three cases the Wassermann was positive and the Targowla reaction negative. Bernard and Ruelle investigated this reaction on 200 cases of syphilis in all its stages, and found that the results of the Wassermann and the Targowla reactions were discordant in only 28 cases. In 14 of these the Targowla was positive and the Wassermann negative; all but three of these 14 cases had definite symptoms and signs of cerebro-spinal syphilis with a history of infection. Of the other 14 cases, which gave a negative Targowla and a positive Wassermann, nine were cases of general paralysis or tabes; one had suffered from an acute syphilitic meningitis (during which time the Targowla reaction was positive), while the four remaining were without any signs or symptoms whatever. These authors therefore claim that not only is the parallelism of this simple test with the Wassermann reaction sufficiently striking to make it of great value, but also that in cases of cerebro-spinal syphilis other than general paralysis or tabes it is actually even more reliable. Difficult biochemical and pathological problems immediately arise if these results can be repeated by other observers, but the very simplicity of the reaction certainly seems to warrant its close investigation in this country.

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[1] Annals of Surgery, July, 1925, p. 63.

[1] Bruxelles Médical, Sept. 13th.

DENTAL PROPAGANDA.

THOUGH pain will often recall the prodigal patient to his dentist, the population at large suffers dental disease more or less gladly because it produces no discomfort comparable with the harm it is causing. The insidious nature of the damage gives a real and special importance to public instruction on the care of the teeth. What form this propaganda should take may be in question, but the necessity for it is beyond doubt. In an address on the subject at the British Dental Hospital on Oct. 15th, Dr. James Wheatley rightly laid more stress on the cultivation of hygiene than on preventive dentistry, and emphasised the need for providing an incentive to right living as well as instruction on how to achieve it. Knowledge is one thing, conduct is another. In particular, he believes, it is necessary to find an incentive for the adolescent who has thrown off the control of parents without accepting the bonds of purpose or of any real object other than pleasure. To excel in sport and to excel in beauty are aims which can be legitimately exploited, and it must be more generally realised that health is a thing to be proud of and that disease is usually the reverse. The ambitious scheme for widespread propaganda put forward by the Dental Board has already been described in our columns.[1] Dr. Wheatley welcomes the action of the Board as likely to educate the public in oral hygiene, but is concerned that it should fit in with the general scheme of public health education. The influence of the Board might be very valuable in a central propaganda organisation loosely attached to the Ministry of Health which should coördinate and assist the work of the health services and voluntary organisations; but in direct public propaganda its influence would be less useful. Dental propaganda, he considers, should be an inseparable part of general health propaganda; it must continue over many years and can only be effectively undertaken by those bodies which have access to the homes and schools. Its presentation to the public depends as much or more upon understanding the mental capacity, attitude, and general environment of the people approached, as upon a complete knowledge of the science, and advocacy of dental treatment is less likely to be suspect to the more ignorant section of the population if it does not come directly from the dental profession. Dr. Wheatley again drew attention to the significant fact that after 50 years of universal education 20–70 per cent. of parents refuse skilled dental treatment for their children when it is provided free of charge, and he suggests to education authorities that they should look upon acceptance or refusal of dental treatment as evidence of the true success or failure of the education in their districts.

A MEXICAN PUBLIC HEALTH BULLETIN.

THE appearance of the first number of what is intended to be a quarterly Bulletin[2] affords satisfactory proof of the intention of the present rulers of Mexico not to lag behind the rest of the civilised world in matters of hygiene. If the programme outlined in this volume is effectively carried out, no easy task in a country with such a turbulent population, it will be a great achievement for the Government, and in any case is evidence that in the matter of public health they have high standards before them. With a view to greater efficiency, the department seems to have been more or less reorganised at the beginning of this year, and now consists of the following sections: Infectious diseases; disinfection; tropical diseases; sanitary engineering; legislation; demography; chemistry and pharmacology; and food and drinks. It also controls the following services: Sanitary inspection; the direction of venereal dispensaries; the institute of hygiene; the Hospital Morelos (maternity); the section of propaganda and hygienic education; the antirabic institute; and the school of health—a sufficiently comprehensive list of sections. As regards its actual work, a strong line has been taken with regard to vaccination. Authorised by a clause in the Federal constitution, the department "established a sanitary dictatorship in the State of Vera Cruz and sent down vaccination brigades" to carry out the law which now makes it compulsory on all. The central department has power to compel the enforcement in individual States of sanitary measures which are not provided for by the State laws, and is convening a congress of State sanitary authorities to consider the unification of the whole administration throughout the Federation. Besides small-pox, special measures were taken against cerebro-spinal fever, malaria, rabies, and bubonic plague, whilst it is recorded with satisfaction that the fight against yellow fever has resulted in its almost complete disappearance. The campaign against tuberculous and venereal disease is being actively carried on, and in both cases dispensaries for treatment are being established. It is of some importance to note that apparently in the future it will be necessary for those wishing to practise in Mexico to pass examination by the university there, but the conditions are not made clear. The main part of the Bulletin is taken up with the usual reports of the activities of the various departments and statistical returns. An unusual feature is a section devoted to sanitary progress abroad, and here the editors pay a high compliment to England by reprinting in full a translation of Sir George Newman's address on Public Education in Hygiene, with some short papers from France and the United States. The volume is well printed and produced. If succeeding volumes show similar results, Mexico will have no need to be ashamed of its Ministry of Health.

BEFORE AND AFTER THE PANEL CONFERENCE.

THE annual conference of local medical and panel committees, of which an account appears on p. 934, was held on Oct. 22nd in London. The impending shadow of the Royal Commission's report tended to cool the atmosphere of its deliberations, though here and there a speech recalled the warmth of a smaller meeting on the day before. A resolution of confidence in the Insurance Acts Committee as the one and only body qualified to represent the panel committees to the Government provoked a discussion from which it was learnt that all parties appreciated the value of unity in the profession, and this was reassuring. It would, indeed, be unfortunate if this unity were imperilled on minor differences of policy rather than of principle. The policy of the majority is at present noticeably cautious, and whatever may be the advantages of individual initiative there is no doubt that Unity is most easily wooed amongst the big battalions which she invariably patronises. It was abundantly clear that the value of personal liberty and the possible dangers of bureaucracy are acknowledged throughout the profession, and if that liberty should be definitely and deliberately challenged united action would doubtless take the place of the united inaction which the majority now desires. The relations of the insurance practitioner, the Ministry of Health, and the law, whilst they deeply interested the Panel Conference, did not, however, take up most of its time. Deficiencies or inaccuracies in the present machinery were suitably exposed, and the interesting question of collecting statistics was discussed at some length. It is admitted that the available information on panel and private practice, its costs, and their repayment, is at present deficient, and if a clearer case is to be presented for raising capitation fees and altering present conditions it is very desirable that accurate knowledge should be obtained. In answer to a proposed scheme it was suggested (to misquote J. M. Barrie), that the fault, dear Brutus, lay not in our staffs but in ourselves, and it is undoubtedly true that whatever organisation comes into being for collecting statistics must have the real personal coöperation of members of the profession if it is to accomplish anything useful.

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[1] THE LANCET, August 15th, p. 342.

[2] Boletin del Departamento de Salubridad Publica, No. 1, 1925. Editorial Cultura Mexico D.F. Pp. 254.

THE SIZE OF THE THYMUS.

The real facts about the weight of the thymus have been fairly well known for some time, but the general opinion of morbid anatomists has been always a good deal coloured by their own experience. And it is in connexion with the thymus that the rarity of chances of carefully dissecting the normal human body soon after death has been particularly misleading—truly ignorance of the anatomy of the average people who walk about the streets is one of the main obstacles to the further progress of pathology especially along statistical lines. In the current number of the *Journal of Pathology and Bacteriology* will be found an analysis by Dr. A. B. Bratton of data which, collected in Prof. H. M. Turnbull's Institute at the London Hospital, probably form as satisfactory a mass of material as can be had. They comprise 337 persons up to 16 years of age who died from accidents, burns or scalds, asphyxia, under anæsthesia, or from the immediate results of these. In other words, the ordinary hospital population is excluded, for it is now realised that it is difficult for a child to get into a hospital and more difficult for it to reach the post-mortem room without suffering from something which causes wasting of the thymus. In line with this, Dr. Bratton shows that the thymus is larger and persists longer than is commonly supposed. It increases rapidly in weight during the first two years, then changes little till the seventh year, when it again increases to fall slightly after the eleventh year till the sixteenth. But more important are two other conclusions which emerge. In the first place, the weight of the normal thymus at any age is so variable that it is practically impossible to say in any individual case whether it is too large or too small. Thus the mean weight at 5 years is about 25 g. But the coefficient of variation of the weights of which this is the mean is about 35, so that a range from 16 to 34 g. will exclude about a third of the cases, and one cannot say that any one thymus is abnormally large unless it weighs fully 42 g. or too small unless it is less than 8 g. The second conclusion is that "we know of no gravimetric evidence that such a condition as 'status thymicus' exists." It seems time that some caution should be exercised in finding in a normal thymus a satisfactory cause of a healthy child's unexpected death.

THE LONDON SCHOOL OF HYGIENE AND TROPICAL MEDICINE.

It was on August 1st, 1924, that the London School of Tropical Medicine became merged in the new London School of Hygiene and Tropical Medicine. At a meeting of the court of governors on Oct. 22nd some account was given of the present position and prospects of the school. The site for the new building is near the British Museum and has frontages on Keppel-street, Gower-street, and Malet-street. It was bought by the Ministry of Health in 1923 for £52,610, and it is hoped that on the plans of the architect, Mr. P. Morley Horder, the new home of the school will be ready for occupation in 1928. One cause of anxiety to the governors has been removed by the generous action of the trustees of the Rockefeller Foundation, who have amended their original undertaking, to provide a sum of $2,000,000 by promising to pay £460,830, which is the value in sterling of the money offered in 1922. By this the Rockefeller Foundation has cancelled the loss due to the gradual rise in the cost of sterling which threatened the school with a diminution in the value of the gift of more than £50,000 if conversion had been made at the rate of exchange now established. Concurrently with the task of preparing for the building, the Education Committee and the Director have given considerable thought to the general educational organisation, and the Board has recognised the necessity for taking early steps to secure the services of prospective heads of divisions in order particularly to have their advice and assistance before the details of accommodation in the new building and of its equipment are finally settled. A grant has been made by the University Grants Committee for this purpose, and in order to supplement in some essential respects the teaching for the Diploma in Public Health, which is now given at University College, Middlesex Hospital, and at the Royal Institute of Public Health. Arrangements will also be made for the equipment and organisation of the museum, which will play an important part in the educational work of the school. The Director, Dr. Andrew Balfour, has issued a report on the work of the Tropical Division for the year 1924–25. The number of students was 227, which was a record, and on the research side there have been important developments. A field station has been established in Southern Rhodesia, in pursuance of the view that available research funds should be applied primarily to setting up field stations, though expeditionary work may be undertaken in exceptional circumstances. Four research studentships in London have been arranged, and the general courses in tropical medicine and hygiene will in future be spread over 20 weeks instead of 13, and much more time will be given to clinical demonstrations and to the teaching of tropical hygiene. There is no doubt that this will equip students far more fully for their work abroad, and that the already excellent reputation of the school will be enhanced.

SHAKESPEARE AND MEDICINE.

On the occasion of the first social evening of the session of the Royal Society of Medicine a very large gathering of members and guests assembled at 1, Wimpole-street, W., to hear the President, Sir StClair Thomson, discourse on Shakespeare as a guide in the art and practice of medicine. Having introduced himself as a lecturer, in a neat and witty speech, the President referred to the remarkable knowledge displayed by Shakespeare of the history of medicine, to the references to the status of medicine in his own day, and to many startling clinical pictures scattered through his plays, and then proceeded to consider in how much the wisdom of the great dramatist could assist the doctor as a guide in the practice of his art, for "If our virtues did not go forth of us, 'twere all alike as if we had them not." From a large and brilliantly compiled selection of quotations we may select a few, seriatim, which any modern doctor might study with profit. No finer panegyric of the medical profession could be written than that put in the mouth of Cerimon :—

> By turning o'er authorities, I have
> (Together with my practice) made familiar
> To me and to my aid, the blest infusions
> That dwell in vegetives, in metals, stones ;
> And can speak of the disturbances that Nature
> Works, and of her cures ; which doth give me
> A more content in course of true delight
> Than to be thirsty after tottering honour,
> Or tie my treasure up in silken bags,
> To please the fool and death. *Pericles*, iii., 2.

It is to be noticed that Shakespeare, in these lines, recognises even in those Elizabethan days of superstition and wholesale drug-taking the vis medicatrix naturæ and gives the quite modern idea of curing our patients—

> With good advice and little medicine.
> *Henry IV.*, Part 2, iii., 1.

A justification for "case-books" is found in the wise note-taking of the Scottish doctor who attended Lady Macbeth: "I will set down what comes from her to satisfy my remembrance the more strongly." (*Macbeth*, v., 1.) The doctor must remember his patients are sick folk, and cannot judge their mental condition as he would that of healthy men and women. King Lear excuses the behaviour of his son-in-law by attributing much of his conduct to physical conditions:—

> No, but not yet;—may be, he is not well:
> Infirmity doth still neglect all office,
> Whereto our health is bound; we are not ourselves,
> When nature, being oppress'd, commands the mind
> To suffer with the body: I'll forbear;
> And am fallen out with my more headier will,
> To take the indispos'd and sickly fit
> For the sound man.
> *King Lear*, ii., 4.

Three centuries before the medical profession had adopted open-air treatment, Shakespeare had advised:

> The most wholesome physic of thy health-giving air.
> *Love's Labour Lost*, i., 1.

and recommended it as one of nature's best restoratives:—

> I pray you give her air,
> Gentlemen,
> This queen will live; nature awakes; a warmth
> Breathes out of her.
> *Pericles*, iii., 2.

> His highness yet doth speak; and holds belief,
> That, being brought into the open air,
> It would allay the burning quality
> Of that fell poison which assaileth him;
> Let him be brought into the orchard here.
> *King John*, v., 7.

Then, on being carried into the orchard of Swinstead Abbey, King John's first exclamation is:—

> "Ay, marry, now my soul has elbow room."

When considering therapeutic measures, said Sir StClair Thomson, we not uncommonly meet with a case which only requires the following pleasant prescription:—

> For so your doctors hold it very meet,
> Seeing too much sadness hath congeal'd your blood,
> And melancholy is the nurse of frenzy;
> Therefore they thought it good you hear a play
> And frame your mind to mirth and merriment,
> Which bars a thousand harms and lengthens life.
> *The Taming of the Shrew*, Induction, Sc. 2.

The advantages of what we would now call the simple life are shown:—

> Come; our stomachs
> Will make what's homely, savoury; weariness
> Can snore upon the flint, when rusty sloth
> Finds the down pillow hard.
> *Cymbeline*, iii., 6.

Encouragement is found in Iago's words:—

> How poor are they that have not patience!
> What wound did ever heal but by degrees?
> *Othello*, ii., 3.

and a patient's self-resistance may be raised by reminding him that:—

> Our remedies oft in ourselves do lie,
> Which we ascribe to heaven.
> *All's Well that Ends Well*, i., 1.

These are but a very few of the wise saws, having countless modern instances, which the lecturer quoted to show why Shakespeare was, and always must be, one of the greatest masters of medicine, in his astonishing acuteness of observation and his sensitive regard for "life's fitful fever." "Shakespeare's plays," he concluded, "will be read by physicians with profit to their patients when most of our modern medical text-books will be lying on the dust-heaps of literature."

Members and guests had the opportunity of inspecting in the course of the evening a most valuable exhibition of objects of Shakespearian interest, prepared by Mr. C. J. S. Thompson, M.B.E., Curator of the Wellcome Museum of Medical History. The collection included portraits of physicians and surgeons who lived in the days of Shakespeare, various portraits of Shakespeare himself, and specimens of plants, herbs, and roots mentioned by Shakespeare in his plays.

THE Chair of Midwifery and Gynæcology in University College, Dublin (National University of Ireland), rendered vacant by the death of Dr. Alfred J. Smith, has been filled by the appointment of Dr. Robert P. Farnan, who was at one time extern assistant to the Rotunda Hospital, and has been for many years gynæcologist to the Mater Misericordiæ Hospital.

Dr. J. H. Burn has been appointed to direct the Central Pharmaceutical Laboratory. It was announced by Mr. F. Pilkington Sargeant in his presidential address last May that the Council of the Pharmaceutical Society of Great Britain had decided to establish a laboratory for the standardisation of substances subject to the provisions of the Therapeutic Substances Act. The Director of the laboratory will have adequate qualified assistance and the help of an advisory committee on which Sir Nestor Tirard, Dr. H. H. Dale, and Sir Humphry Rolleston are serving as representing respectively the General Medical Council, the Medical Research Council, and the British Medical Association. Dr. Burn's distinguished academic record and work as pharmacologist and biochemist at the National Institute for Medical Research will fit him for a post which is likely to become of no little importance. The examination and standardisation of therapeutic substances is one of the really urgent questions of present-day medicine.

Modern Technique in Treatment.

A Series of Special Articles, contributed by invitation, on the Treatment of Medical and Surgical Conditions.

CLXV.—THE TREATMENT OF INFANTILE PARALYSIS.

THREE separate and distinct phases are presented by the average case of infantile paralysis and each phase has its particular treatment.

(1) *The Onset.*

There is usually a febrile period accompanied by great lassitude, headache, sickness, and flaccidity of muscles. In severe cases delirium and convulsions may precede a fatal issue. In others there may be absence of fever, and a child, at night apparently normal, may in the morning exhibit weakness of one or more limbs. There is no definite relation between the amount of initial constitutional disturbance and the degree of paralysis which ensues. Hyperæsthesia is almost a constant feature, with great tenderness of skin and muscles. Trophic changes are present early and the affected limbs become cold and reddish-blue in colour. Complete rest and warmth are the two most important essentials during this time. Support must be provided for the limbs, the joints being placed in the "normal" positions—hips and knees extended, ankles at a right angle. In upper limb paralysis the arm should be abducted at the shoulder, elbow at a right angle, and wrist dorsiflexed. The best means of securing such rest and warmth is by the provision of a plaster "shell." The body being first enclosed in cotton-wool, the plaster is then applied with the limbs, head, and back supported in the correct positions. If it is not possible to provide such a shell, a spinal frame with head-piece of the usual type, with the addition of foot or arm splints, makes a good substitute, but requires more attention. At this time no massage or electrical stimulation should be given and everything done to promote quietness and complete absence of mental or physical irritation.

(2) *The Recovery Period.*

This commences after a few weeks. The mental condition improves, irritability is lost, and the child becomes more interested in what is going on around it. Physio-therapeutic measures should now be instituted, commencing with the gentlest form of massage, "effleurage" or stroking movements. The benefit of massage is soon shown by diminution in the degree of coldness and cyanosis. After each massage treatment the joints of the limbs affected should be gently moved through their normal range and every possible active movement encouraged. During the period of muscle-training active movements should be performed against the least possible loads. As an example of this may be given the movement of extension of the knee produced by the quadriceps extensor. In case of weakness of this muscle the patient should not be asked to extend the knee in the ordinary sitting position with the weight of the leg and foot against the muscle, but the patient should be lying down with the affected limb on its side supported on a smooth table. In this way the effort needed to extend the knee is very greatly reduced. At this time electrical stimulation may be introduced. Its greatest use is in the production of muscular contraction in the paralysed muscles where a voluntary contraction is impossible. The muscle is thus exercised and prevented from rapidly degenerating into mere fibrous tissue. If a contraction cannot be obtained by a moderate faradic current it will be necessary to use galvanism. Later it may be found that faradism will produce contraction and it should then be substituted. About the same time it is often found that voluntary contraction begins to be possible. By this date the acute stage is well over and the paralysis is beginning to define itself. It may be found, for example, that the right leg alone shows paralysis and that the foot is cold with no power of dorsiflexion, a little power in the calf, no extensor power at the knee, but fair power in the hamstrings. Moderate power is present in all hip movements. Such a limb should be exercised well, bearing in mind that support must always be provided for the weak muscles. The child should wear, at night, a splint to keep the knee extended and the ankle at a right angle. In the application of a splint to maintain the right angle at the ankle it is of the utmost importance that the medical attendant should see that the nurse, masseuse, or mother who is responsible for the putting on of the splint should appreciate the fact that the heel must come down to the foot-piece. One so often sees such a splint applied with the heel a couple of inches away and the forepart of the foot alone meeting the foot-piece. In this way many cases of paralytic equinus are produced. In the daytime a walking appliance should be provided, and, in the case of such a paralysis as we have assumed, a "walking calliper" will be most suitable with a spring added to dorsiflex the ankle. With such an appliance a child will soon get about and will exercise the limb to the fullest possible extent. Should both legs be paralysed two callipers will be needed and in this case a walking machine is of great assistance. After a period of such treatment for 12 months the degree of residual paralysis may be determined.

(3) *Residual Paralysis.*

This is the stage in which little or no further change takes place in the recovery of power and in which surgery must attempt to diminish, as far as possible, the need for appliances and to utilise the residual power to its best advantage. The handicap of steels, leathers, and straps, loaded on a limb already severely enfeebled, must be reduced to its absolute minimum.

Much may be done, and the measures which offer the greatest chance of improvement are: (*a*) tendon transplantation; (*b*) tenodesis, or tendon fixation; (*c*) arthrodesis, or stabilisation of joints. These procedures, which have been largely developed during the past ten years, have proved their worth and are now a well-established part of the surgical repertory. Three simple cases may be taken to illustrate the utility of the three operations.

Paralytic Talipes Valgus.—Here the residual paralysis affects the tibialis anticus and posticus, and the foot is drawn over into a valgus position by the unopposed peronei. In this case the peroneus brevis, and sometimes the tertius as well, is transferred to the inner side of the foot and fixed to the insertion of tibialis anticus and scaphoid bone. In all such operations the transplanted tendon must run in as straight a line as possible from origin to new insertion so as to act at the best mechanical advantage. The foot, after operation, is supported in inversion, preferably by plaster, for six weeks, and at the end of this period the transplant must be "re-educated" and developed to perform its new function. Such a transplant when successful will overcome the valgus and so avoid the need for an outside iron and T-strap.

Drop-foot.—In this hypothetical case the dorsiflexors of the ankle are paralysed and an iron with a "stop" at the ankle-joint or an uplifting toe-spring must be worn so that the toes may clear the ground in walking. The paralysed tibialis anticus is exposed in the lower third of the leg and its tendon is cut across at its upper limit. A tunnel is bored transversely through the crest of the tibia and the cut tendon is looped through the bone and sewn back to itself and to periosteum with the ankle at a little less than a right angle. There is always some "give" after such a tendon fixation, so that it is advised to give the ankle about ten degrees more dorsiflexion than is desired in the ultimate result.

Unstable Ankle.—In such a foot the remaining power is so small that, when weight is placed on it, the ankle "wobbles" to one side or the other and is forced over into a deformed position. There may be some available muscle power, probably in peronei or calf. The precise distribution varies greatly, but the need for stabilisation of such a foot is apparent. The ankle-joint movement, plus the mid-tarsal movement, permits a range about the ankle as great as a ball-and-socket joint would, and it must be our object to remove the mid-tarsal movement and leave only the up and down hinge movement of the ankle-joint proper. There is, of course, a little side-to-side and rotatory movement at the ankle-joint, but it is slight, and amounts to very little when the mid-tarsal "wobble" is removed. Several methods of dealing with the mid-tarsal and astragalo-calcaneal joints have been devised, but the object in each case is the removal of the articular cartilage of the astragalo-scaphoid, astragalo-calcaneal, and calcaneo-cuboid joints and the procuring of bony union in these situations. Three months' fixation in plaster is required after such an operation. In a successful case it is then found that the foot is stable and can bear weight without rocking over. Usually a combination of the measures above mentioned is necessary, stabilisation of the mid-tarsus with the addition of a tendon transplant or tendon fixation being the common procedure. Mid-tarsal arthrodesis should not be attempted before the age of 8 years because of the amount of bone surface needed to ensure firm ankylosis.

Another common site for the use of arthrodesis is at the shoulder-joint, where power of abduction is lost and the arm cannot be carried away from the side, but where the shoulder can be effectively "shrugged" by the scapular rotators and elevators. In these patients it is usual to find a good forearm and hand. The articular cartilage of glenoid and head of humerus is removed and the arm fixed at a little less than a right angle from the side and 30 degrees in front of the transverse axis of the pectoral girdle. The shoulder is fixed in plaster in this position from the time of operation for three months and, after firm ankylosis is procured, the arm can be lifted from the side by the scapular muscles quite strongly, so that very much more use can be made of the non-paralysed forearm and hand. Because of the ossification of the humerus and glenoid it is not wise to undertake this arthrodesis until the age of 14 years.

Robert Ollerenshaw, M.D. Manch.,
F.R.C.S. Eng.,
Orthopædic Surgeon to the Royal Manchester
Children's Hospital.

Special Articles.

THE PANEL CONFERENCE:

PROFESSIONAL UNITY AND DISCIPLINE.

THE annual conference of representatives of local medical and panel committees met at the British Medical Association's house in Tavistock-square, London, on Oct. 22nd, under the chairmanship of Dr. E. K. Le Fleming, of Dorset. This was the first meeting of the panel conference in the Great Hall, and the Chairman's opening words of congratulation to the British Medical Association on its new premises were cordially endorsed by the delegates.

Report of Insurance Acts Committee.

On the motion to receive the report of the Insurance Acts Committee (hereafter called the I.A.C.) for 1924–25, Dr. H. G. Dain, the chairman of that body, said that the conference agenda raised few big controversial questions because a special conference earlier in the year had dealt with the evidence placed before the Royal Commission, and because plans of development and improvement must wait on the report of that Commission. He drew attention to the new arrangements for ophthalmic benefit,[1] which were experimental and were the first attempt to add a specialist service to the general practitioner service. It was hoped that other similar services might be added. A new standard had been set up and the approved societies would have to be weaned from their previous arrangements. As yet a very small number of insured persons came under the scope of the scheme, and it had also been difficult to ensure that the right ophthalmic specialists appeared on the lists. The other important matter in the report referred to the disciplinary powers of the Ministry of Health. A deputation of the I.A.C. had put before the Minister four guiding principles[2] which had been proposed to the Royal Commission, and the Minister had agreed that these principles were sound, though they might not be easy to apply. There was no evidence as yet whether the interview had borne fruit, but it was noteworthy that there had been no decisions by the Ministry since the interview on June 18th, 1925, which were not in keeping with the principles suggested. That for which they had stood most firmly was that under no circumstances was an officer of the Ministry competent to set up a standard of treatment. Insured persons were entitled to the best services the duly qualified practitioner could give them, but a lay Ministry ought not to insist on a standard of treatment different from that which the doctor offered to a private patient.

Unity in the Profession.

Dr. E. R. Fothergill then moved a special resolution of confidence in the Insurance Acts Committee of the British Medical Association as the one and only body authorised to defend the honour and interests of insurance practitioners and to voice their wishes. The resolution urged all constituent committees loyally to support that Committee only, and to dissociate themselves from any action taken within the profession by others, which could only result in disunion and in rendering collective bargaining impossible. He had put down the resolution that morning on reading in the lay press an account of a conference held on the previous day which had appointed delegates to put its views before the Minister. He recalled the efficient action of the I.A.C. on various occasions; it represented 99 per cent. of insurance practitioners; it was recognised by the Government as expressing the profession's opinion, and it was a body which considered the good of the public as well as of its constituents. If panel committees coquetted with other organisations the public would think that the profession was in revolt. The future was likely to be far from calm and unity was essential.

Dr. Peter Macdonald feared that the proceedings referred to might lead the profession to suppose that the I.A.C. had done nothing, and this entirely wrong impression must be corrected.

Dr. Gordon Ward said that the Medical Practitioners' Union was in existence and was increasing in membership; it claimed no more support than it received. He believed in unity, too, and considered it very unwise to force the M.P.U. into antagonism.

Dr. E. A. Gregg said that the M.P.U. had never received the thanks that its work deserved. Though the I.A.C. seemed satisfied with the Minister's utterances the profession was not thus satisfied. It was their duty to press for the widest possible freedom for the practitioner.

Dr. H. B. Brackenbury thought that, although individual members of the profession could do what they liked, there must be no division of loyalties amongst panel committees. To send a separate deputation to the Ministry was a fatal step. Dr. Fothergill's motion was carried.

Disciplinary Machinery.

In support of a motion by Croydon that all complaints against insurance practitioners should be dealt with in the first instance by insurance committees, it was stated that the Ministry had deducted fines from doctors for failing to send in reports of their patients to tuberculosis officers, and that this had been done without reference to the insurance committee.

Dr. H. G. Dain said that tuberculosis officers reported such defaults to their regional medical officer who reported direct to the Ministry. The Ministry's view was that where no fact was in dispute it was unnecessary to refer to the insurance committee, and in the opinion of the I.A.C. it would be unwise to press against this view. Croydon considered the matter to be one of principle rather than convenience, but the conference did not agree, and the motion was lost.

Right of Appeal from Minister's Decision.

A long discussion followed a motion by Cheshire that insurance practitioners should have a right of appeal from the decisions of the Minister to the High Court, or, when removal from the panel was in question, to a medical tribunal if such were created. This appeal was to be exercised not only on grounds of procedure, but on the merits of the case.

Dr. L. J. Picton said that opponents had objected that litigation would be endless if such a right of appeal were granted; that the idea was unconstitutional; and that to ask for such rights suggested lack of confidence in the Minister, who could interpret the special terms of service of insurance practice which might not be understood by the common courts. But the practitioner had no fear of the common law, and it was regrettable that he was deprived of the right which every citizen enjoyed. This safety-valve had been shut down for fear of excessive litigation, and it had been a great mistake. They did not want to appeal against penalties, but in the rare event of an appeal to the High Courts being demanded they wanted the cases tried again de novo.

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[1] Vide THE LANCET, Oct. 17th, p. 823.

[2] The four principles referred to are these: 1. That when a complaint has been dealt with by the bodies set up by the regulations for this purpose there should not be a liability to have the whole matter reopened by separate departmental action, either by the Ministry itself or by those bodies at the instigation of the Ministry. 2. That when a complaint has been made in one prescribed form penalties should not be inflicted in respect of offences not formally alleged or of offences which, if alleged, should have been formulated in a different prescribed way and might have required a different line of defence. 3. That full consideration should be paid to the findings or recommendations of a committee (whether Medical Service Subcommittee or Inquiry Committee) which has itself investigated the details of the case in mitigation of the heinousness of the misconduct even when proved. 4. That it is essential to draw a strict distinction between professional conduct in the attention given to a patient and the nature of the exact professional treatment given to the patient, and that the propriety or otherwise of any particular method or line of treatment should not be made the subject of investigation in connexion with the insurance service.

Dr. D. F. Todd moved an amendment to the effect that the appeal should be made to an independent authority only if the panel committee approved; but the Conference thought that this gave unsatisfactory authority to the committee, and the amendment was lost.

Dr. G. C. Garratt said that the present machinery had broken down; the Ministry's powers were a standing menace to the profession and it could only have gained them by a lamentable oversight. They were more fundamentally foreign to the British Constitution than any other legislation since Stuart times.

Dr. Brackenbury remarked that the I.A.C. had suggested to the Royal Commission that all personal disputes as to judgment, neglect, and the like, should be taken out of the insurance machinery and should be treated exactly as in ordinary practice. It had also suggested that there were only three possible grounds for complaint—namely, giving a false certificate, taking money from a patient after giving an undertaking not to do so, and habit or conduct such as ought to remove a man from the panel.

The Conference decided that for the time being it had been sufficient to ventilate its opinion, pending the Royal Commission's report, and accordingly passed on to the next business.

Administrative Items.

A motion that when a practitioner recommends an approved society to send a member to an ophthalmic surgeon whose name appears on the list he should have the right of nominating the surgeon was amended so that "suggesting" took the place of "nominating." It was pointed out that suggestion was always possible and that the motion had lost point, but the Conference passed it nevertheless as a record of its opinion. The proposal was made that a distinction should be made on the lists between operating ophthalmic surgeons and practitioners whose experience enabled them to do refraction work, but this was not approved. The Conference agreed to a motion by the I.A.C. that a return should be made to the earlier practice of intimating to patients, on the notices sent to them on the death or retirement of their doctor, that unless they made a fresh choice within 14 days they would be transferred to the successor's list.

The question of the abuse of such a rule by rapid re-transference of practices thus transferred was passed on to the I.A.C. for consideration. A resolution against unnecessary records of attendances, which tend to obscure the important clinical notes, was carried with little or no opposition, and a proposal by Lincoln that doctors should have permission to issue intermediate convalescent certificates before 28 days' treatment had been given also received assent. It was agreed that the time of issue should be left to the doctor's discretion and that the maximum period covered should be one month.

Dispensing Allowances.

Essex moved, and the Conference agreed:

> "That, in view of the difference between the average cost of drugs dispensed by a chemist in the area of the Essex Insurance Committee, which amounts to 8·7*d.* per insured person per quarter for the year 1924, compared with the amount of the capitation fee paid to rural practitioners for the purpose of dispensing drugs—namely, 6*d.* per quarter per insured person, the Insurance Acts Committee be asked to take such steps as they may deem necessary to obtain an increase in the remuneration paid to rural practitioners who undertake their own dispensing."

Evidence of an inquiry into the costs of prescribing and dispensing was given by Northumberland, and Dr. J. P. Williams-Freeman said that the rural subcommittee would like to have such evidence from other areas. Fees for serum dispensing were also discussed and referred to the I.A.C., and the Medico-Political Committee was asked to consider further the standardisation of methylated spirit.

Treatment of Seamen: Private Patients.

Essex drew attention to the practice of the Seamen's National Insurance Society in urging its members to go to doctors whom it recommends. The low rates accepted by practitioners who work for this society were also considered.

Dr. Alfred Cox said that the question was an old one, and the B.M.A. Medico-Political Committee was trying to get the society to raise the scale. The recommendation of certain doctors was intended to benefit the seamen themselves, for these doctors were experienced in dealing with them and the seamen preferred their advice. It was, said Dr. Cox, very difficult to induce members not to accept the lowered fees, but Southampton had taken a lead against this practice.

Dr. J. S. Manson, in moving a resolution for Warrington, said that it was not clear what was the position of an insurance practitioner if an insured person not on his list wanted to come to him as a private patient. It was suggested by other speakers that if the patient persisted in his wish to be treated privately after it had been explained that he could be treated under the Act there seemed to be no reason why he should not be a private patient; but that it was important to have his assurance in writing.

Collection of Statistics.

Kent introduced a motion deploring the inability of the profession to produce authoritative statistics on such matters as fees, mileage, costs of transport, and the average income of medical men, and suggesting an organised campaign to collect such statistics, for which a part of the National Defence Trust's funds might be utilised. In a preliminary statement, Dr. A. Cox said that 270 practitioners were already making returns of their insured and uninsured patients, and that 150 model account books had been forwarded, of which 20 had so far been filled up and sent back. He thought that the scope of this investigation was big enough if only the doctors would return the figures; it was individual work rather than theoretical plans that were needed.

Dr. Gordon Ward (Kent) said that the country should be mapped out into districts; every practitioner in a district should be personally encouraged by travelling investigators to give the necessary particulars, as the people willing to send in figures by themselves were a special group and not representative. Figures of income in the so-called comparable professions should be collected. The isolated instance was of little value, but the general district survey was invincible as evidence. A central statistical committee should be set up, and, although a minimum of £5000 would be required for the purpose from the National Fund (which stood at £78,000), the evidence that would be collected might eventually mean a difference of 6*d.* in the capitation fee of 15 million insured persons.

Dr. J. W. Bone did not think £5000 would go far.

Dr. Williams-Freeman thought that a permanent statistical committee of the B.M.A. would be very useful. The Conference eventually agreed with Kent that information was desirable, and referred the matter to the I.A.C., without, however, instruction as to the exact methods to be adopted.

Other Problems.

A suggestion that a limit should now be fixed to the National Defence Fund was also referred to the I.A.C. and there was considerable discussion of the failure of many local committees to subscribe. Coöperative action between practitioners and regional medical officers was also considered, and the possibility of redress when unfounded charges were made by approved societies.

The Conference expressed its opinion that insured persons who are no longer entitled to benefit should be notified of the fact by the approved societies.

The Chairman, Dr. Le Fleming, was unanimously re-elected for the ensuing year. The Conference concluded at about 6.45 P.M.

PANEL CONFERENCE DINNER.

A dinner to the Insurance Acts Committee was held at the Trocadero Restaurant, London, in the evening, at which, as in previous years, Dr. H. J. Cardale, chairman of the London County Panel Committee, occupied the chair. A large number of delegates to the Panel Conference attended and derived entertainment from many witty speeches, from the slightly miraculous efforts of Mr. Herbert Collings and from the songs of Miss Ethel Kemish. Proposing the health of the members and officers of the Insurance Acts Committee, Dr. J. O. Summerhayes said that what was wanted on that Committee was "a strong mixture," and they had got it. The Committee was leading them—though he hardly knew where; in spite of the rivalry of another organisation it would continue to do so, and as long as it made arrangements by which the man who did his duty by his patients was not defrauded of his proper recompense, then he, for one, would be content. Dr. H. G. Dain replied amusingly for the I.A.C.; Dr. Alfred Cox deplored the fact that no doctor ever reads anything, and Dr. G. C. Anderson discussed Dr. Cox's approaching departure for South Africa. Dr. R. A. Bolam proposed the health of the medical Members of Parliament and Dr. Haden Guest, M.P., replied. He said that the medical committee of the House, which had 14 Members, put the medical interests of the community before the particular interests of parties. He considered that medicine was a particularly valuable training for public life; what was needed in politics was a more scientific attitude, and the successful doctor was wanted there far more than the successful financier or grocer. Dr. Graham Little, M.P., also spoke of the Parliamentary Medical Committee, of which he is secretary. There were ten times as many lawyers as doctors in the House, and the balance should be redressed. It was unnecessary and even undesirable to give up practice on entering political life. Sir Richard Luce, M.P., largely endorsed the views of his colleagues and described his own unexpected political debut. The dinner ended with "Auld Lang Syne."

SCOTLAND.

(FROM OUR OWN CORRESPONDENT.)

James Mackenzie Institute for Clinical Research, St. Andrews.

ON Oct. 20th Prof. Adam Patrick described some observations on temperature and pulse-rate, showing an interesting series of charts illustrative of most of the common fevers. He strongly advocated greater accuracy in recording temperature, drawing attention to the common practice of nurses in omitting to record temperatures below 97° F. Similar inaccuracy was common in regard to high pulse-rates. The physician, wherever possible, should check the records by his own observations. He insisted on the extreme value of graphic records of the pulse-rate, a gradual rise in rate being more readily detected where this method is employed. In rheumatic fever, for example, a pulse chart was the best indicator of the onset of endocarditis. He deprecated the use of the word "normal" in relation to a fixed point of temperature such as 98·4° F. This might be regarded as the upper limit of normal temperature, but in nearly all healthy individuals the average morning temperature was considerably lower. As a rule the pulse-rate increased about ten beats as the temperature rose one degree, but there were wide differences in this ratio in different diseases. He drew attention to the fact that in many febrile conditions the quickened pulse of fever was succeeded during convalescence by an unusually slow rate. He considered that all these matters required more accurate recording and fuller investigation.

Prof. Harvey Cushing's Address.

On Oct. 23rd Prof. Harvey Cushing delighted a large audience with an informal talk, illustrated by references to his own special subjects of study, on the comparison between research work as carried on in hospital and in general practice. He pointed out that the necessary stimulus for research was the same—namely, the common desire to find satisfactory answers to problems of difficulty which present themselves for solution. The worker who saw all his patients in an institution (as he did in America) had better opportunities for obtaining records of his special cases and more time and facilities for investigation than the general practitioner. He himself was directly descended from three generations of general practitioners, who had practised in the same district, and one of his most cherished possessions was a collection of the case-books of these ancestors. Not only were they records of illness in individuals, but they provided, by their continuity, material for the study of familial tendencies which could be obtained in no other way. They demonstrated the extreme value of accurate and continuous records in medicine. To enhance the value of records, he advocated the employment, wherever possible, of instruments of precision; though it must be clearly understood that these must never overbalance the general judgment of a case. He referred to the ophthalmoscope, the sphygmomanometer, the polygraph, the electrocardiograph, and the thermometer, pleading for more accurate use of the latter (as did Prof. Patrick in his address). Routine daily records of facts such as temperature might often appear to be a waste of time, but not infrequently an observation of the greatest importance would crop up.

In connexion with his special study he warned practitioners that, in cases of cerebral tumour, any of the cardinal symptoms (headache, vomiting, choked disc) might be absent, and, indeed, that cerebral tumours of slow growth might attain considerable size with no symptoms whatever. In his experience the intracranial cavity was the commonest site of tumour growth in the body. He spoke of the importance of detailed recording of such a symptom as headache (site, time of occurrence, and character) on Mackenzie's lines. If any symptom was carefully studied in this way important leads were sure to emerge. He commented upon our ignorance of the mechanism of production of headache. In conscious patients direct manipulation of the cerebral substance produced no sensation, but acute pain was experienced if the membranes were pulled upon, or an artery clipped or ligatured. Clinical research, whether by specialists or by general practitioners, was carried out by similar means and with the same object. The inquiring mind, that would not rest till it got an explanation, was what mattered.

Edinburgh: Royal Medical Society.

At the opening of the 189th session of the Society, Sir James Purves-Stewart delivered the inaugural address on comradeship in science. The Senior President, Dr. Drummond Shiels, M.P., was in the chair. Sir James Purves-Stewart, said his subject was selected mainly to address to those of his hearers who would seek their fortunes elsewhere than in Edinburgh. The capacity of combination with one's fellows and the faculty of profiting by such combination was a fundamentally biological principle. The lowest type of herd, said the speaker—quoting examples in the animal kingdom—was that of the communists, where all were equal. There was then the type which had developed specialised classes, consisting perhaps of workers and fighters. And, lastly, there was the type which had a kind of monarchy, where one individual was higher than all the rest—such as in the case of the queen bee. Man could only reach his highest development by following this instinct, with its pride of family, profession, country, or race. Every ordinary individual desired to be one of a crowd. In civilised communities the herd instinct dominated. If the herd instinct was lost in a man he became selfish and vicious. Passing on to discuss the beneficent effects of gregariousness, coöperation, or comradeship in professions, such as the medical profession, Sir James Purves-Stewart said it would be inappropriate at such a time to discuss abstract socialism as a political mode of life. But socialism of a constructive type had been going on in a small but important part of the community. Men of science had pooled their knowledge for the general advancement of science, and more, they let the whole world profit. The working man rode every day for twopence in an electric train. He knew nothing of electricity, and perhaps would never be able to master the application of such knowledge to the problem of his transport. He reached his destination; he was taken to the surface again by a moving staircase, of the mechanism of which he was again entirely ignorant. And if he stepped off with the wrong foot first and was seriously hurt he would be taken to hospital, where medical science, of which he knew nothing, would do all that science could do for him, and would do it for nothing. That was the socialism of science. What did it receive in return from those who profited by it? They all knew the answer. Our hospitals were chronically in debt; research was half-starved. Compared with the manufacturer, the merchant, or the financier, very few scientists were wealthy men. In fact, practically no return was made by the great body of laymen in any way commensurate with the advantages which they so eagerly accepted.

PARIS.

(FROM OUR OWN CORRESPONDENT.)

Hygiene and Budgets in Paris.

SCARCITY in the public funds at Paris is noticeable in two striking ways. The onset of winter brings discomfort from cold in apartments, office buildings, laboratories, class-rooms, and assembly halls of all sorts, and the large libraries are greatly hampered by insufficient illumination. The medical profession is thus considerably affected. The Academy of Medicine, whose pre-war budget sometimes rose to 65,000 francs in days antedating later huge advances in general costs, has been so poorly warmed during this autumn that a committee of the academicians has been obliged to wait upon the public powers with a request for adequate fuel. A Paris newspaper observes that, since charity and lotteries are scarcely applicable here, the savants of the Academy will have to remain at home.

Closed Pharmacies.

The closure of pharmacies at night, on Sundays, and on holidays constitutes one of the few drawbacks of our capital. All-night service is available at one pharmacy on the Boulevard de Montmartre, rather a long way from the Opéra, and a pharmacy near the Gare St. Lazare remains open until midnight. These two pharmacies appear to constitute the practical night service at Paris, unless one has recourse to the mairie of his arrondissement for official direction to a pharmacy supposedly open. Pharmacies closed at night, on Sundays, and on holidays usually post up a list of pharmacies, of which one should always be open. One often makes troublesome trips to these places only to find them closed after all. This system of closure is due to action by the pharmacists' union. A pharmacist preferring to keep open shop has recently tried it, with great benefit to the public and displeasure to his syndicate. This case has caused legal action and is not yet settled. Anyone who is ill at Paris had better do his pharmaceutical shopping early.

Surgery and Taxation.

Taxes will continue to hamper life generally in France for a long time to come, as they do everywhere. Imposts on anæsthetics and other drugs and medicinal substances complicate the surgical and medical situation not a little. The maisons de santé, or private hospitals, of Paris, now taxed on a hypothetical profit basis of 20 per cent., are so gravely menaced by this difficulty that surgery is by no means without danger of being relegated to makeshift operations in private houses, since the general raising of prices to cover the taxation is scarcely practicable for large medical and surgical needs. A committee of the French Surgical Syndicate, which has just been in session, is considering this matter.

Treatment of Congenital Syphilis.

The importance of treating syphilis preventively, by prompt attention to the pregnant mother and to infancy and early childhood, is now comprehended universally, and at the Paris conference on congenital syphilis, to which I referred in my letter last week, the following conclusions were adopted: Congenital syphilis should be treated promptly and during a number of years. Not only must symptoms be controlled, but real cure must be sought. Active signs require treatment by progressively increasing doses of arsenicals, contra-indications being duly observed. Fundamental treatment with mercury or bismuth should be instituted when clinical and serological signs have ceased or if the disease remains latent. Opotherapy should accompany antiluetic treatment if endocrine function be insufficient. Breast-feeding by the mother is imperatively demanded, and in no case may a wet-nurse be employed. Observation should continue for a long time after the cessation of treatment.

Music in Hospitals.

While music has been advocated for systematic application after anæsthesia and in other ways, it is also useful simply as a recreation, especially in institutions containing many incurable cases, and patients who must drag out a long, hopeless existence. A group of interested persons has just provided a fine gramophone for a large medical ward in the Hôpital Lariboisière. The instrument cannot well be installed in the general ward, since it could not always be acceptable to all the sick. It is being installed in a small room adjacent to the ward, and to this modest "salon" those of the patients who desire may resort for a little solace. The records selected supply a variety of music, but the best of the classics predominate. This thoughtful provision should aid materially in cheering the indigent and resourceless sick, although less ambitious than the plan to provide every hospital bed in London with a listening-in set.

NOTES FROM CANADA.

(BY AN OCCASIONAL CORRESPONDENT.)

Lord Dawson at McGill University.

Lord Dawson of Penn was given the honorary degree of Doctor of Law at the autumn convocation of McGill University, held on Oct. 6th. In an address delivered after receiving the degree Lord Dawson said that a university must not think only of future vocations when providing students with their equipment for life. The training of character, essentially a duty of a true university, would not be effected in an institution that was a mere emporium of facts. Adequate facilities were not in themselves sufficient, unless the student mind received training from the teaching system, and the brilliant and rapid advances that invention was making were apt to obscure the spirit of education. Lord Dawson accorded high praise to McGill as the first University in the Empire to send a fully-equipped hospital to France during the war; no hospital in the Service had surpassed it in reputation. He concluded an eloquent address by urging the students to play their full part in the affairs of the country and of the Empire. Sir Arthur Currie, the principal of the University, laid especial stress on the idea that their duty did not lie in application to study and to study alone; their duty was to realise and participate in the problems of Canada. He showed what McGill had meant in the life of Canada, in medicine and surgery, in commerce, in the schools and colleges, in peace and in war, and reminded them of the young men who had crowded their way to death 11 years ago at the call of their country. Those in the University to-day were born too late to answer that call, but still had their duty. Every great crisis in Canada was an Ypres, a Vimy, a Passchendaele, and a great battle for their country lay before them—a battle against ignorance and prejudice and wrong.

On Oct. 12th Lord Dawson gave an interesting address to the Academy of Medicine, Toronto, on High Blood Pressure. He discussed especially the influence of anxiety and strain.

Objections to Milk Pasteurisation.

The Union of Coöperative Milk Dealers of Montreal object to certain of the milk regulations about pasteurisation, and have asked the city council of Montreal to compel farmers providing milk for pasteurisation to pass the same strict examination and qualify to the same degree as those who furnish natural or raw milk, which is called special milk in the by-law. They base their conclusions on the premise that germs enter milk between the time it is drawn from the cows and pasteurised; if milk be not treated immediately after it is drawn it is useless to pasteurise it because the products of bacterial action are already present though the milk is apparently given a new lease of life. They question adversely a clause in the regulations demanding that milk from a herd in which a tuberculous or doubtful cow is found shall be pasteurised before it is sold, by which no milk may be sold as raw while the suspected cow remains in possession of the owner of the herd. It is pointed out that the enforcement of this regulation does not protect the public, and will allow unscrupulous dealers to circumvent the law and sell natural milk, although a cow in the herd may be tuberculous; the cow is simply transferred to another person for the time being in order to hoodwink the inspectors. They insist that pasteurisation is practically useless unless applied immediately after milk is drawn, and that the only way to guarantee pure milk is to ensure that it is clean and healthy in its origin. It must come from healthy cows which are able to pass a high test such as that required for raw milk.

Standardisation of Education in Canada.

Prof. Stephen Leacock, addressing the students of Queen's University on Oct. 16th on the Work of the Canadian Universities, drew attention to the danger of over-standardisation in education. He pointed out that there was a tendency nowadays, in America at any rate, to reduce everything to a standard or pattern. In the industrial world this was admirable; but though the standardisation of a Ford car was excellent the standardisation of brains was dangerous. It did not do to have every school and every college like every other school and college. There was in Canada a notable contrast between the American ideal of education and the British—or what was till yesterday the British. Prof. Leacock considered that in Great Britain the training of the student was on freer lines, less definite, less mechanical; it was not cut and divided into parts, and more play was left for individual variety, for individual preference, and for individual difference. Education, in short, he said, contained a large element that was more or less at random and spontaneous. He uttered a warning against the spreading tendency in Canada to adopt the American standardising type of education. Education, he said, needs freedom, variety, and elbow room.

Public Health Services.

REPORTS OF MEDICAL OFFICERS OF HEALTH.

THE following are some of the health statistics of four seaport cities for 1924:—

Name of city.	Estimated mid-year population (R.-G.).	Birth-rate.	Death-rates per 1000 of the population.				Death-rates per 1000 births.		
			All causes.	Tuberculosis.	Cancer.	Resp. diseases with influenza.	Neonatal mortality.	Infant mortality.	Maternal mort. from childbirth.
Glasgow . . .	1,051,000	24·1	16·1	1·46	1·21	3·7	38	119	5·5
Bristol	386,200	18·7	12·8	1·16	1·34	2·8	34	72	4·6
Hull	296,800	22·4	13·5	1·32	1·23	3·4	32	87	3·6
Newcastle-upon-Tyne . .	285,900	22·2	13·5	1·47	1·25	3·0	45	100	2·4

Glasgow.

Dr. A. S. M. Macgregor (interim medical officer of health) submits the report for the year 1924, during which Dr. A. K. Chalmers was still medical officer of health for the city. The local estimate of the population exceeds that of the Registrar-General by 45,000, and if the local estimate be used the rates per 1000 of the population in the above table would be reduced by about 4 per cent. Thus the Registrar-General's death-rate of 16·1 would become 15·4.

In the maternity and child welfare scheme it was decided to experiment in the provision of home-helps, and in August about 30 to 40 suitable women were enrolled for the purpose, but their services were only sought on nine occasions. The number of women admitted to the antenatal wards of the Royal Maternity Hospital was 706, an increase of 100 when compared with the previous year. The number of new cases attending the antenatal clinics was about 3700, the births being 25,330. There were 592 cases of ophthalmia neonatorum notified. The symptoms of the disease appeared within 12 hours of birth in 46 cases, between 12 hours and 4 days in 221 cases, between 4 and 8 days in 206 cases, and later than 8 days in 119 cases. Of the total cases, 49 were classified as gonococcal, 348 as non-gonococcal, and 195 were unclassified. Of the survivors among the gonococcal cases, 3 had corneal scars in one eye without the sight being impaired, 1 had a corneal scar with impaired sight in one eye, 1 had corneal scars in both eyes with unimpaired sight, 1 had scars in both eyes with impaired sight, and 1 was blind in both eyes. Of the non-gonococcal cases none of the survivors had impaired sight. Owing to the difficulty frequently experienced by midwives in obtaining the services of a doctor in an emergency, an alteration of the rule of the Maternity Hospital, by which admission can only be obtained on the direct request of the medical attendant, has been made, and the Maternity Hospital will now admit such cases when a medical man is not available.

Two cases of small-pox were treated in hospital during the year, both being infected abroad. Infantile vaccination is fairly well maintained in Glasgow, about two-thirds of the infants in the city having been successfully vaccinated during the years 1920 to 1922. The number of conscientious objectors varies, however, in the different wards. Thus in Fairfield and Gowan 37 and 35 per cent. respectively of the infants were not vaccinated during 1924, while in Kelvinside the percentage of conscientious objectors was only five.

An unusually extensive school outbreak of scarlet fever was recorded just after the summer holidays, 45 scholars and 2 teachers being infected out of a total of 1030 scholars and a staff of 18. Encephalitis lethargica was more prevalent during 1924, the maximum being reached during the month of May. There were 391 cases with 46 deaths. At Ruchill Hospital serum immunisation against measles has been used to a limited extent. The incidence of the disease was thereby considerably reduced among susceptible contacts, and in a few cases the disease developed in a modified form. A considerable amount of hospital accommodation has always been found for badly housed cases of measles and whooping-cough in Glasgow, and during 1924 it was decided to appoint additional nurses to supervise home-treated cases of these diseases.

A report on the deep X ray treatment of tuberculosis by Dr. J. A. Wilson and Dr. Fergus Henderson shows that beneficial results were obtained in certain cases of chronic non-pulmonary tuberculosis. This treatment was especially satisfactory for cervical glands and for bones and joints when the lesions were single and superficially placed. For the deep joints, such as the hip, and in all joints where there was extensive exudation, the results were unsatisfactory.

Bristol.

Dr. D. S. Davies reports that with a view to the coördination of the medical services of the city the school medical officer has been appointed deputy medical officer of health, and that arrangements were made during 1924 whereby children found by the maternity and child welfare staff to be suffering from eye troubles or crippling diseases, such as rickets, infantile paralysis, &c., are referred to the school clinics for treatment. During the year 97 cases of eye trouble and 43 of crippling diseases were so referred. The health committee contemplate developing Frenchay Park Sanatorium into a complete orthopædic hospital in order to avoid the present inconvenience of sending cases to distant hospitals. Milk samples, to the number of 50, were examined for tubercle with two positive and one suspicious result. Visits to the farms were unsuccessful in finding out the offending cows. The hospital accommodation for infectious diseases has been reported as inadequate for several years, there being 240 beds for a population of 386,000, and in April the council decided to provide 56 additional beds at Ham Green Hospital. The work is now in hand.

During 1924 an inquiry was carried out by Dr. Dorothy Staley as to the sequelæ of encephalitis lethargica. The inquiry covered 76 patients, whose illness began during the years 1919–23. Of the 76 cases, 26 had completely recovered, 4 could not be traced, and 4 had died. Of the remainder, 6 were totally unable to work, 15 showed partial inability to work, and 17 suffered from apathy, dullness, drowsiness, and defective memory. Two were affected by dementia, 2 by viciousness, and 35 suffered from various forms of paresis. Many of the patients presented a multiplicity of nerve lesions, and a number were in a very grave condition. In few was there any appearance of improvement taking place at present. Dr. B. A. I. Peters, the R.M.O. of Ham Green Hospital, reports that during the three years from the adoption of the Schick test for the staff until the end of 1924, no immunised member of the staff has contracted diphtheria nor has anyone been incapacitated from duty owing to the inoculations. Previous to this, an average of five members of the staff was attacked annually by diphtheria, and in 1921 no less than 12 developed the disease.

Hull.

Dr. J. Wright Mason submits his forty-third and last report, and in doing so contrasts some of the statistics of the first and last years of his tenure of office. Thus when 1881 is compared with 1924 the population shows an increase from 155,160 to 296,800, the birth-rate has declined from 36 to 25·8, and the death-rate from 23 to 13·5. The rate from zymotic diseases was 6·12 in 1881 and 0·6 in 1924, whilst infant mortality has declined from 193 to 77.

Dr. Katherine Gamgee reports on the maternity and child welfare work. During 1924 150 cases of eye discharge in babies were investigated, of which 122 were classed as true ophthalmia neonatorum. In three of the 122 cases there was injury to the cornea, in one case there was blindness of one eye, and in one case blindness of both eyes. In the first quarter of the year the maternity home was transferred to Cottingham and was temporarily established in the new pavilion of the infectious diseases hospital. The available accommodation has thus been increased from 11 beds to 20. The sisters of the maternity home act as municipal midwives in turns, and an antenatal clinic is held at 14, Kingston-square for cases seeking admission to the maternity home, for all abnormal cases, and for primiparæ applying for a free midwife. Dr. Ethel Townend, the part-time medical officer to the maternity home, conducts the antenatal clinic, and between June and December, 1924, she saw 866 cases. Of this number, 87 were found to be abnormal and to require treatment. One case of severe heart disease was admitted to the home and treated for some time. Labour was induced prematurely and mother and child were discharged in a satisfactory condition. Of 34 cases of disproportion between the head and the pelvis labour was induced in 12 cases. Amongst the other antenatal patients were six cardiac cases, 12 external versions, seven cases of albuminuria, two of antepartum hæmorrhage, one of acute pyelitis, and eight cases of severe varicose veins. Dr. Gamgee conducts an antenatal clinic for cases sent by midwives or doctors. These cases numbered 160 during the year. A real start has therefore been made in preventive midwifery in Hull.

The notifications of encephalitis lethargica numbered 35 and eight deaths were recorded. Ten of these cases were admitted to hospital and several were found to be suffering from some other disease, and in three cases death ensued from other causes Hull has begun in earnest to tackle the conversion of privies and pail-closets to water-closets. The conversions effected during the last four years were 183, 594, 1598, and 5163. The number of privies at the end of 1924 was 10,000 and of pail-closets 22,000.

Newcastle-upon-Tyne.

Dr. H. Kerr reports that, in spite of industrial depression, unemployment, and a slight rise in the cost of living, as a whole the year has been exceptionally healthy. The hours of sunshine recorded at Armstrong College were 728 and at Cockle Park, a few miles north of Morpeth, 1313, showing what is lost by atmospheric pollution. There were 26 deaths from diabetes as compared with 38 in the previous year. The improvement may be due to the introduction of insulin, but, on the other hand, the deaths in 1922 and 1921 were only 28 and 29 respectively. Influenza was prevalent during January and February, and caused 71 deaths. Small-pox appeared in the city for the first time since 1910. There were five mild cases among persons unvaccinated or who were over 30 and had not been revaccinated since infancy. The number of infants vaccinated was 70 per cent. in 1923 and dropped to 61 per cent. in 1924. Of the 28 cases of typhoid fever notified, all except two were traced to the consumption of ice-cream at the coast. At the time of the occurrence there were no by-laws in force for controlling ice-cream manufacture at Tynemouth, and ice-cream was discovered to have been manufactured in a house in which a case of enteric fever had occurred. Eight of the Newcastle cases occurred in a single family of nine persons, of whom three died. These were the only deaths in the city from this disease. There were 96 notifications of encephalitis lethargica and 15 deaths. The type of the disease was more severe than in preceding years, and most of the cases occurred in the poorer and overcrowded quarters of the city. Only in three cases was there evidence of transmission of infection from one member of a family to another. It is considered probable that the mental impairment which resulted in 19 of the survivors will be permanent.

Dr. A. F. G. Spinks, in the maternity and child welfare report, states that antenatal work makes some progress. Thus 414 expectant mothers attended the six antenatal clinics. The births for the city numbered 6335. The "handy" woman has almost disappeared in Newcastle and all but six of the 43 practising midwives are trained women. The death-rate among illegitimate babies was less than among the legitimate, and it is pointed out that 174 of the 253 illegitimate babies were under the supervision of the centres.

Dr. Kerr points out that men affected by tuberculosis have little chance of obtaining a new house, and suggests that the health committee might subsidise persons of this class to enable them to obtain corporation houses. He emphasises the futility of benefiting the health of the consumptive in the sanatorium and then allowing him to return to appalling home conditions. The health committee is considering the establishment of a workshop where patients returning from the sanatorium could do work according to their limitations. The open-air school on the Pendower Housing Estate became an established fact during the year, but no adequate provision has yet been made by the health committee for surgical tuberculosis. The health committee purchases "Certified" and "Grade A (tuberculin-tested)" milk for the use of the City Hospital, and the agricultural department of Armstrong College is now conducting much local teaching on the farms of the northern counties, and is also organising clean milk competitions. The transport of milk remains unsatisfactory, but the L. and N.E. Railway are said to be considering the adoption of an improved type of milk wagon. The effort to secure the rinsing of empty milk cans before return is making progress. Thus in 1922 2·5 per cent. were found by the inspectors to be unrinsed, in 1923 0·5 per cent., and in 1924 0·2 per cent. The last figure is the result of the examination of 25,015 empty churns. Dr. Kerr has no improvement to report in housing conditions. Only 11 municipal houses were completed during the year, but some hundreds more were in course of construction at the close of the year. 268 houses were erected by private enterprise. "There is still no power," says Dr. Kerr, "to control the cases of heartless profiteering on the part of the exploiters of so-called furnished lodgings."

MENTAL HOSPITAL REPORTS

THE seventy-ninth annual report of the *Devon Mental Hospital* at Exminster is just what such a report should be. Over 1170 patients are accommodated under the charge of four medical officers, and every effort is made to keep the institution in the front rank. The visiting commissioner mentions the many improvements since his previous visit, which include better baths, more stringent precautions in the administration of medicines, and the provision of bed tables, pianos, and aluminium bedroom, kitchen, and table ware. The recovery-rate for the year was 32·29 per cent. and the death-rate 6·92 per cent., a satisfactory decrease on previous years and the lowest on record since 1899. Post-mortem examinations were held on 60 per cent. of the fatal cases. Twenty cases were discharged on trial with money allowances, and parole has been increasingly allowed. There has been a gratifying increase of private patients able to afford a moderate fee and sent in by doctors practising in the county. The sanatorium has been reopened for the isolation of infectious cases; the hospital has been troubled by small epidemics of dysentery and typhoid. The pathological laboratory has carried out the routine work satisfactorily. Blood cultures in the early days of doubtful fevers revealed seven cases of typhoid, which might possibly never have been recognised clinically. A systematic search for the source of the typhoid infection is now being conducted. A new operating theatre was opened in the course of the year, and the hospital has now a full staff of visiting specialists from Exeter, who visit monthly. The dental surgeon, in addition to his routine work of extractions and fillings, examines all new patients on admission. An X ray department will be in full working order shortly. Every effort is made to bring variety and interest into the lives of the patients. No less than 360 went for all-day motor charabanc picnics during the summer, while many others went out for half-day excursions gathering fruit and flowers. During the winter weekly dances and concerts are held, and a Pathé cinematograph and a wireless set have been installed. The patients much appreciate the new ward socials, which allow them to stay up till 9.30 P.M. Fêtes, sports, and games are also included in the programme. The occupational therapy includes printing, weaving, mat-, net-, stocking-, and shoe-making. Patients who wish to wear their own clothes are allowed to do so, and the workhouse type of garment is being done away with as it becomes worn out. Thirty attendants and nurses hold the M.P.A. certificate, and every effort is made to encourage a high standard of nursing, but the universal difficulty in obtaining satisfactory probationers has been experienced.

The ninety-fifth report of the *Belfast Mental Hospital* is illustrated with photographs showing the excellent system of 11 "villas," in which 1000 patients are housed, according to their condition. The recovery-rate for the year was 24 per cent. and the death-rate 7 per cent. There is rather a high proportion of cases of general paralysis (24 males and three females), which accounted for 17·5 per cent. of the deaths. The malarial treatment has continued to prove satisfactory; out of 48 cases treated, 14 were discharged, 12 were well improved, 8 slightly improved, and 6 died. There have been slight outbreaks of influenza and typhoid fever, rapidly checked by isolation. The typhoid has now been traced to the water-supply and a filtration plant installed. Parole and home visits are allowed wherever possible, and there has been no abuse of the privilege; 60 per cent. of the patients are usefully employed on the farm or in the workshops or wards. A new lending library has been formed, and the "tuck shop" gives innocent pleasure.

The *Monmouthshire Asylum* at Abergavenny supports 1140 patients. The present accommodation is not sufficient to allow of satisfactory segregation, although the system of small dormitories allows classification within wards. The recovery-rate was 40·8 per cent., a great improvement on previous years. The death-rate was 6·2 per cent., and there was no epidemic disease except a few cases of influenza. The dietary has been considerably improved. The dentist has been busily employed, but this institution has at present no specialist visiting staff. An instructor is to be engaged this year for those likely to benefit from physical exercises. Every effort is made to find employment for all patients. Forty-two nurses and attendants hold the M.P.A. certificate. All the visitors remark on the contented and domestic atmosphere of the wards.

INFECTIOUS DISEASE IN ENGLAND AND WALES DURING THE WEEK ENDED OCT. 17TH, 1925.

Notifications.—The following cases of infectious disease were notified during the week: Small-pox, 43; scarlet fever, 2382; diphtheria, 1145; enteric fever, 59; pneumonia, 758; puerperal fever, 36; cerebro-spinal fever, 6; acute poliomyelitis, 10; acute polio-encephalitis, 3; encephalitis lethargica, 56; continued fever, 1; dysentery, 5; ophthalmia neonatorum, 86. There were no cases of cholera, plague, or typhus notified during the week.

Deaths.—In the aggregate of great towns, including London, there were 4 deaths from enteric fever, 26 from measles, 17 from scarlet fever, 29 from whooping-cough, 28 from diphtheria, and 47 from influenza, as compared with 57, 51, 41, and 26 in the preceding weeks. In London itself there were 7 deaths from diphtheria, 2 from whooping-cough, and 10 from influenza, as compared with 12, 9, 5, and 7 in the preceding weeks.

Correspondence.

"Audi alteram partem."

ACTIVE IMMUNISATION AGAINST DIPHTHERIA.

To the Editor of THE LANCET.

SIR,—I have pleasure in discussing in more detail the matter dealt with in your annotation of Oct. 3rd. The Austrian Ministry of Health, in response to my suggestion, has recommended that the sale of toxin-antitoxin mixture for active immunisation against diphtheria should not be allowed in Austria. To this recommendation was, however, appended the express condition that the matter should be discussed again, if new methods should be devised, or if such an increase occurred in the number and severity of the cases of diphtheria as to make an active campaign against the disease necessary. Research with new antidiphtheritic methods was not forbidden, only the sale of the preparations.

At present the number of cases of diphtheria is actually so small that the use of intensive measures would not be worth while. We fear that the use, without sufficient grounds, of active immunisation in its present form, which is admittedly not wholly without danger, might compromise all immunisation methods in the public mind, as actually occurred after the recent fatal cases in Baden. Active immunisation is, in any case, not the only means of defence. For the occasional outbreaks of diphtheria of a mild type, with which we have here to do, we find the passive immunity conferred by antidiphtheritic serum entirely satisfactory.

The wish to offer opposition to scientific methods is, needless to say, far from me, for it is just in the prevention of infectious disease that I have always been particularly interested. You will not forget that in your own country the best and most satisfactory of all immunisation methods, that of Jenner himself, is not universally accepted. By pushing the use of methods that have not been fully worked out, one only gives material for opposition to that unscientific section which makes capital out of every failure.—I am, Sir, yours faithfully,

Dr. CLEMENS PIRQUET,
Director of the University Children's Clinic, Wien.
Oct. 21st, 1925.

STANDARDISATION OF BACTERIAL VACCINES.

To the Editor of THE LANCET.

SIR,—In a review of Kolmer and Boerner's "Laboratory Diagnostic Methods," published in THE LANCET of Sept. 19th, p. 606, attention is paid to the nephelometric method of standardising bacterial suspensions, and a preference is expressed for the method of McFarland as compared with that of Brown and Kirwan. The latter was published in the *Indian Journal of Medical Research* in 1915, and was subsequently elaborated in the same journal by the writer in 1919. The main difference between McFarland's method and the other is that in his no allowance is made for the fact that certain organisms are more translucent than others, and the opacity of a certain tube containing a suspension of barium sulphate is stated to be approximately equal to the opacity of a certain definite number of bacteria. In the former paper (Brown and Kirwan, 1915) it was shown that the numerical equivalent of bacterial suspensions of the same opacity varied according to the particular organism under observation.

In my second paper special attention was directed to the fact that the numerical equivalent of bacterial suspensions varied considerably according to the method of standardisation, and I therefore urged that vaccines should be expressed as containing a certain definite weight of dried bacterial substance, a table being given correlating the opacity with the weight of dried bacterial substance for the organisms commonly used in vaccine therapy. Although the dosage of tuberculin has always been expressed in terms of weight, the custom of expressing vaccines in terms of weight instead of number has not come into common use. Cunningham and Timothy realised that a correlation between the opacity and the numerical content of vaccines in common use would probably be more popular than that between weight and opacity, and in a very exhaustive piece of work[1] they correlated, by means of hæmocytometer counts, the number of organisms corresponding to the opacity of the barium sulhpate tubes introduced by Kirwan and myself. These observers performed not less than 30, and, in some instances, as many as 100 counts of 80 small squares for each organism, the readings and opacity values being estimated by the two observers separately. Their findings, therefore, are of extreme value. One very noticeable feature of their results is that for the same opacity there are 2·9 times as many cholera vibrios and three times as many *B. influenzæ* (Pfeiffer) as there are *B. coli*, and other bacteria, too, differ in this respect. This is only what one would expect if in the case of the cholera vibrio the translucency of the organism, and, in the case of *B. influenzæ*, the size is taken into account.

Now both these organisms are commonly used in the manufacture of vaccines, and therefore it would seem that the method of standardisation advocated by McFarland is capable of giving at least a 300 per cent. error if no allowance is made for the variations in opacity produced by the same numerical equivalents of a vaccine per unit volume. Regarding the comparative simplicity of the two methods, in the one which we advocate there are ten tubes containing varying dilutions of barium sulphate, the opacity of which is compared with a similar tube containing the vaccine; the result is then read either in terms of weight of dried bacterial substance per cubic centimetre or by means of Cunningham and Timothy's table as number in millions per cubic centimetre, as counted by the hæmocytometer method. The procedure of standardising vaccines by this method can easily be accomplished in three minutes. It, therefore, cannot be considered complicated, and with the help of Cunningham and Timothy's table it is hoped that one man's million will no longer be another man's thousand.—I am, Sir, yours faithfully,

H. C. BROWN,
Major, I.M.S. (retd.).
Wellcome Bureau of Scientific Research, Oct. 15th, 1925.

AWARENESS OF THE BODY SURFACE.

To the Editor of THE LANCET.

SIR,—Normally, one is only aware of the surface of the body when attention is drawn to it, or when one thinks about a special part. The receptors of the superficial parts of the body have a threshold of resistance that unless a stimulus for which they are adapted occurs, such as pain, touch, or temperature, no sensations arise. By usage we come to neglect the ordinary stimuli caused by clothing, &c., and we are not aware of it unless some special discomfort arises. Hence, awareness of the body surface does not normally occupy consciousness. I have recently seen a case where the patient complained of excessive "awareness" of the surface of the body.

The patient, an intelligent woman of 52 with a neurotic temperament, complained that she became tired on doing a slight amount of work, and that she had to lie down for the greater part of the day. She slept badly, was subject to fits of depression, and felt that she could take no interest in anything. On questioning her, she said that for some time she has had this uncomfortable sensation of awareness of the presence of every part of the surface of her body. She said that this seemed to occupy her whole consciousness and prevented her from concentrating on anything. The sensation was worse on the body and limbs, and least on the hands, feet, and face. She did not complain of pain although she said that she bruised readily. On examination she had a very marked diffuse panniculitis affecting practically all the subcutaneous tissue. Some parts were tender on pressure, and here fibrous nodules were present, but in the main the condition seemed to be a diffuse infiltration of the subcutaneous tissues. The skin could not be picked up in a fold and it was tightly adherent to the subcutaneous fat. Any handling of it gave rise to a sensation of soreness, and left a bright red flush which lasted for a considerable time.

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[1] Indian Journal of Medical Research, 1924, p. 1253.

The generalised thickening of the subcutaneous tissues will involve the superficial nerves, and they are bound down by the inflammatory tissue to the skin and to the muscular aponeuroses. The continual slight movements present in muscles in a state of postural tone will stimulate the nerves embedded in this tissue, and stimuli will be constantly entering the nervous system from all parts of the body surface affected by the condition. There is probably, in addition, a susceptible state of the nervous system, or a condition of lowered resistance to stimulation. From this arises the consciousness of the different regions of the body surface. It is easy to understand that this continual awareness of the body surface would occupy a large part of the conscious field, and render concentration on anything almost impossible.

This case is of interest as showing the physical basis for what would at first appear to be merely a neurotic manifestation.

I am, Sir, yours faithfully,
Hector M. Walker, M.D.
Harrow, Oct. 15th, 1925.

PIONEERS IN TROPICAL MEDICINE.

To the Editor of The Lancet.

Sir,—With reference to the very kind annotation in The Lancet for Oct. 24th of my presidential address on the above subject to the Royal Society of Tropical Medicine and Hygiene, may I, in justice to the memory of a great and good man, point out that I did not describe Sir John Pringle as pursy and peppery? I said he looked pursy and peppery in his portrait. This is a very different matter, for portraits, especially reprints of portraits painted in the eighteenth century, may not always give a correct reproduction of the original. As a matter of fact I went on to show that Pringle's portrait belied his character, for he was in every respect a very fine man, and there is no indication that he was either peppery or pursy, although, as I said, there was plenty to make him peppery! I should also, perhaps, state that George Biddy of your annotation should be George *Bidie*, this being the way in which the distinguished surgeon-general of the Madras Presidency spelt his name. Benjamin Rush no doubt did his best to quell the outbreak of yellow fever in Philadelphia in 1793, though, in the absence of precise knowledge as to its method of spread, he could not accomplish very much in this direction, but his chief claim to fame is that, during that epidemic, he formed the opinion that the disease was not contagious.

I am, Sir, yours faithfully,
Andrew Balfour.
London School of Hygiene and Tropical Medicine,
Endsleigh-gardens, N.W., Oct. 23rd, 1925.

⁂ Pringle's magnificent services to medicine and in particular to military hygiene could not have been rendered unless his face had belied him. He was in many ways far in advance of his time, and may be said to have foreshadowed the Geneva Convention of our own day. Although Benjamin Rush had no exact knowledge as to how yellow fever was spread, his belief that it was the result of filth in the streets of Philadelphia was so faithfully proclaimed as to cause the greatest anger among the citizens, and incidentally to clear up the nuisance. We are glad to learn that Dr. Balfour's informing address will be available in full in the *Journal of Tropical Medicine and Hygiene* when it appears. —Ed. L.

X RAYING OF TEETH: THE LATEST CRAZE.

To the Editor of The Lancet.

Sir,—Have any of your readers, whose patients' teeth have been X rayed, ever received a report that there was nothing amiss with the teeth? Judging by my experience, everyone whose apparently sound teeth are X rayed is said to have diseased ones. Two of my patients recently went to an oculist. He had their teeth X rayed. A patient went to an aurist and one to a laryngologist; they had their teeth X rayed also. The verdict in each case was that several teeth ought to be extracted. All these patients had more or less recently seen their dentists, who had found nothing wrong with their teeth. One can only wonder how any of the lower classes can see or hear or smell! This tooth-extracting mania seemed to be a good deal on the wane, chiefly, I take it, because doctors with the largest experience of "rheumatic" conditions thought it had been greatly abused. But since this X raying of teeth came into fashion the madness is worse than ever. I am informed that continental medical men do not attribute anything like the same importance to the condition of the teeth as we do, and think we have gone crazy on the subject. I am disposed to agree with them.

I am, Sir, yours faithfully,
Cadogan-place, S.W., Oct. 20th, 1925. Gould May.

⁂ On another page we review a very important book by Dr. Weston Price, of Cleveland, Ohio, which deals exhaustively with the fallacy of judging the degree of dental infection simply from study of a radiogram. The existence of apical rarefaction is not enough to condemn a tooth and he refutes the assumption prevalent in America, that these rarefied areas denote a menace to general health proportional to the degree of bony absorption.—Ed. L.

HOSPITALS, GENERAL AND SPECIAL.

To the Editor of The Lancet.

Sir,—I have read with much interest Mr. Bishop Harman's article in The Lancet of Oct. 17th. I would like, however, to correct him on one point. Mr. Harman writes: "There is at Charing Cross in London a large general hospital with its own eye department and next door to it there is an eye hospital." As a matter of fact, there is no eye department at Charing Cross Hospital. Some few years ago a working arrangement was come to between the Royal Westminster Ophthalmic Hospital and Charing Cross Hospital by which the latter closed its eye department, small as it was, and the few patients on its books were transferred to this hospital. The staff of this hospital undertook to teach ophthalmology to the students of Charing Cross Hospital Medical School (last year 43 students attended the practice), and a member of the staff was appointed a lecturer to their medical school. In exchange we can call upon their general staff to treat our patients apart from eye diseases, and, if necessary, our in-patients who develop complaints other than "eyes" can be transferred to Charing Cross Hospital for in-patient treatment. Thus there is the daily contact between the specialist and the general surgeon and physician which Mr. Harman advocates. We have here two institutions, working side by side, each carrying on its separate sphere of work in an efficient manner.

As a lay officer to a special hospital of nearly 30 years' experience I may be biased, but I am of opinion that our general hospitals, as at present constituted, could not possibly cope with the vast influx of "special" patients. For instance, in 1924 the five ophthalmic hospitals of London treated 107,792 out-patients, representing 271,819 attendances, with a total of 222 occupied beds. They could not be absorbed in general hospitals. Moreover, the patient is a factor that must be taken into account. It is an undoubted fact that in this age of specialism the patient prefers to go to a special hospital, dealing solely with the complaint from which he may be suffering, whether it is eyes, nose and throat, and so forth.

Again, the special departments of our general hospitals are nothing like so well equipped as the special hospitals. Generally speaking, patients can only attend once or twice a week at the most, against a daily attendance in a special hospital, and taking "eyes" alone, I know of general hospitals where the eye specialist is lucky if he can get six beds set apart for his use. The whole question, if I may use the expression, boils down to the point, What do the patients want? And the answer is that so long as the special hospitals carry on their work in an efficient manner, keeping abreast with the times, so long will they be in demand by the public.

I am, Sir, yours faithfully,
J. H. JOHNSON,
Secretary, Royal Westminster Ophthalmic Hospital, W.C.
Oct. 19th, 1925.

*** We have submitted Captain Johnson's letter to Mr. Harman, who writes: "The change in the arrangements between the Royal Westminster Ophthalmic and Charing Cross Hospital was not known to me. I had in mind the time when Mr. Treacher Collins was the eye surgeon at the latter hospital. But the point, had I known it, would only have made me the more able to drive home the lesson I was striving to bring out. That the R.W.O. Hospital and the general hospital next door have a working arrangement is the better plan and that which I stated was coming into play in place of which I had information."—ED. L.

RESPIRATORY CATARRH IN CHILDREN.

To the Editor of THE LANCET.

SIR,—It is most cheering, for such views are still rare, to read Dr. R. C. Clarke's article in your issue of last week, in which he recommends, as a preventive for nasal catarrh, that children should live in the open air or in a draught. I can endorse his experience that under such conditions they do not suffer inconvenience from feeling cold. My own children, when not out of doors, live and sleep in draughts in all weathers, and I have been surprised to find how little clothing they require for warmth and comfort. They never "catch cold" unless brought into contact with people suffering from nasal catarrh, and this chiefly when school life begins. One would like to see all schools built for open-air life on the lines of the hospitals being erected for the treatment of tuberculosis and rickets by direct sunlight.

With regard to babies being bathed in a room with the windows open, I think that mothers and nurses who fear the danger of exposure to cold should be reminded that they leave out of calculation the time element. A baby left naked on the lawn all night will be found dead in the morning, but the effect of cold moving air on the bare skin of a healthy kicking infant for five minutes will only have a bracing effect.

I am, Sir, yours faithfully,
IVY E. HASLAM, M.D., M.R.C.P.
Bromley, Kent, Oct. 26th, 1925.

PREMATURE BURIAL.

To the Editor of THE LANCET.

SIR,—The possibilities of premature burial under existing circumstances are extremely remote, but the mere fact that such a possibility exists is a matter of grave import to the peace of mind of many of the living, as evidenced by the periodical recurrence of the question, which so far has elicited no definite solution. I cannot but think, however, that if the following suggestion were generally adopted as part of the preparation for burial, there would be no further need for any anxiety on this score.

The coffin should be made deep enough for the body, when in situ, to be an inch and a half to two inches below the level of the rim. A thick layer of sawdust is spread at the bottom of the coffin, banking up towards the sides, and on this the lightly clothed body is placed. Then some 12 hours before the coffin is closed down it should be filled carefully with sawdust up to the level of the rim, the face having been previously covered with a soft fabric. It must be seen to that the sawdust fills every interstice around the body, and that it is well and thoroughly pressed down. The coffin is then left without the lid. A special face cloth could be devised reinforced in the part that would cover the mouth and nostrils, so that in case of a sudden gulp the fabric should not form wedge or rupture.

I think it is safe to say that however slow the ebb of life, however deep the state of attenuated animation, no human being, thus hermetically isolated, could live for an hour, probably not for 15 minutes, without that struggle for air being brought about which would cause the person to raise himself up and be restored to the freedom of life.—I am, Sir, yours faithfully,
L. VINTRAS,
Consulting Physician to the French Hospital.
Oct. 21st, 1925.

LUMINAL, BORAX, OR BROMIDE IN EPILEPSY.

To the Editor of THE LANCET.

SIR,—May I suggest that the value of Dr. C. Worster-Drought's prescription for epilepsy (sodium bromide and sodium biborate) might be enhanced in the case of some patients at least, by the addition of, say, ten drops of the tincture of nux vomica? Probably the best routine mixture for epilepsy is one containing these three drugs. I do not advocate the addition of arsenic as a matter of routine, as some patients can take considerable quantities of bromide for years without suffering any serious inconvenience from pustules. As to the value of luminal, either alone or in addition to the bromide mixture, there can be no doubt. Only by carefully experimenting is it possible to discover the most suitable combination of drugs and their dose for individual cases.

I am, Sir, yours faithfully,
Harley-street, W., Oct. 26th, 1925. HARRY CAMPBELL.

The Services.

ROYAL NAVAL MEDICAL SERVICE.

Surg.-Comdr. W. E. Ormsby is placed on Retd. List with the rank of Surg. Capt.

Surg. Capt. H. S. Burniston is placed on the Retd. List with rank of Surg. Rear-Admiral.

ROYAL ARMY MEDICAL CORPS.

Maj. E. M. J. O'Farrell to be Temp. Capt. and temporarily relinquishes the rank of Maj.

Lt. W. Boyd, late R.F.A. (Spec. Res.), to be Lt.

MILITIA.

Maj. H. H. Brown relinquishes his commn. and retains the rank of Maj.

TERRITORIAL ARMY.

Capt. R. C. Aitchison (R. of O.) to be Maj.

Supernumerary for Service with the O.T.C.—Majs. G. A. Williamson and H. Emerson resign their commns. and retain their rank.

Lt. C. J. A. Woodside resigns his commn. and is granted the rank of Capt.

Lt. R. E. Holme to be Lt.

ROYAL AIR FORCE.

R. J. K. Chattey is granted a short service commission as a Flying Officer for three years on the Active List.

INDIAN MEDICAL SERVICE.

Lt.-Col. A. Fenton to be Col.

Majs. B. E. M. Newland, L. A. H. Lack, Narendra Singh Sodhi, and W. C. Gray to be Lt.-Cols.

The Admiralty have published the limits of the promotion zones for the half-yearly advancements of commanders in the medical branches of the Service. Surgeon-commanders must be of eight years' seniority and over on the date of selection.

Medical News.

University of London.—At a meeting of the Senate held on Oct. 21st, Prof. E. A. Gardner, the Vice-Chancellor, being in the chair, the following bequests were accepted: From the late Sir Rickman Godlee, Bt., a legacy by which, after the death of his wife, one moiety of his residuary estate is given to University College and the other moiety of his residuary estate to University College Hospital. From the late Miss L. S. Gibbs, in memory of her mother, the sum of £150 per annum to be devoted to the establishment of a studentship, to be called "the Laura de Saliceto Studentship," for the advancement of cancer research, either on the physiological or the chemical side.

The Semon Lecture: University of London.—Dr. Patrick Watson-Williams (of the University of Bristol) will deliver a lecture on the Toll of Chronic Nasal Focal Sepsis on Body and Mind in the Lecture Hall of the Royal Society of Medicine, 1, Wimpole-street, W., on Thursday, Nov. 5th, at 5 P.M. The chair will be taken by Sir William Milligan. A reception will be held at 4.30 P.M., prior to the lecture.

Royal College of Surgeons of England.—The Bradshaw Lecture will be delivered on Nov. 11th by Mr. James Sherren, the subject being Gastro-jejunostomy, and the Thomas Vicary Lecture on Nov. 18th by Prof. William Wright, who will take for his subject the Mediæval Conception of the Anatomy and Physiology of the Central Nervous System. Both lectures will begin at 5 P.M.

Queen Charlotte's Maternity Hospital: Post-graduate Lectures.—The following series of post-graduate lectures will be delivered at Queen Charlotte's Maternity Hospital, Marylebone-road, N.W., during November and December on Thursdays at 5 P.M.: Nov. 5th, Mr. A. W. Bourne, Common Obstetric Difficulties; Nov. 12th, Mr. T. Stevens, Meddlesome Midwifery; Nov. 19th, Mr. T. B. Davies, Clinical Aspects of Abortion; Nov. 26th, Mr. L. Roberts, Conditions Leading to Obstructed Labour; Dec. 3rd, Mr. L. C. Rivett, Antepartum Hæmorrhage; Dec. 10th, Mr. L. Phillips, The Failed Forceps Case; Dec. 17th, Mr. Leslie Williams, Albuminuria of Pregnancy.

Joint Tuberculosis Council: Post-graduate Courses.—During September two courses of study in tuberculosis were arranged by the council in consultation with the Ministry of Health, as follows:—(1) A course of two weeks' duration in the pathology and bacteriology of tuberculosis conducted by Dr. Roodhouse Gloyne at the City of London Hospital for Diseases of the Heart and Lungs, Victoria Park, limited to six members. (2) A course in non-pulmonary tuberculosis of one week's duration. Demonstrations were held during the week at Heatherwood Hospital, Ascot; Queen Mary's Hospital, Carshalton; the Dermatological Department of the London Hospital; the Royal College of Surgeons; All Saints Hospital for Genito-Urinary Diseases; Wingfield Orthopædic Hospital, Oxford. The class was limited to 30 members. The courses were very well attended and it is the intention of the Joint Tuberculosis Council to arrange post-graduate courses to be held in 1926. A syllabus will be issued in January.

Fellowship of Medicine and Post-Graduate Medical Association.—Dr. J. Campbell McClure will lecture for the Fellowship of Medicine on Monday, Nov. 2nd, at 5.30 P.M., in the Lecture Hall of the Medical Society of London, 11, Chandos-street, W. His subject will be the Climatic Treatment of Tuberculosis, and all members of the medical profession are welcome to attend. Throughout the month of November the London Lock Hospital will hold a comprehensive course dealing with the Study of Venereal Disease, and as the course is only held if there be a sufficient entry early application is requested. There will be a three weeks' course in Gynæcology at the Chelsea Hospital for Women from Nov. 2nd to the 21st, consisting of demonstrations in the theatre, wards, &c. From Nov. 3rd to the 28th Dr. Porter Phillips and Dr. Thomas Beaton will give twice weekly lecture-demonstrations on Psychological Medicine at the Bethlem Royal Hospital. At the Victoria Park Hospital a course will be held in Diseases of the Chest from Nov. 9th to the 21st. From Nov. 23rd to Dec. 12th the Royal Waterloo Hospital will hold a course in Medicine, Surgery, and Gynæcology, embracing the various departments pertaining to diseases of women and children. A late afternoon course (4.30 to 6 o'clock) will take place at the London Temperance Hospital from Nov. 23rd to Dec. 4th for the benefit of the general practitioner. Copies of the syllabus of these courses, as also the general programme, may be obtained from the Secretary to the Fellowship of Medicine at 1, Wimpole-street, London, W. 1.

Royal College of Physicians of Edinburgh, Royal College of Surgeons of Edinburgh, and Royal Faculty of Physicians and Surgeons of Glasgow.—The following candidates have passed the Triple Qualification Examination:—

FINAL EXAMINATION.

Alistair G. Cruikshank, Kristian Skulberg, Ian E. Dirckze, William A. F. Hurst, Jack Greenstein, Cecil J. R. Morrison, Nathanael J. Knoesen, William A. N. Chanmugam, Archie N. Tong, Isadore Kovolman, Cheng Leng Tan, David Lumsden, Thiam Hock Wee, Coruvakankanage Don Martinus Madappuli, Alfred A. Labinjoh, David D. H. Craig, Irma E. L. Law, Joseph W. McVicker, James Hasson, Constance C. Reid, Ella D. Messenger, John S. Whiteside, Thomas W. Chapman, Cassaly Ismail, John R. Hetherington, Appacuttiar B. C. Doray, Jack Cohen, Mary A. McGill, Tom G. S. Harkness, Louis G. Blaze, Albert E. Williamson, George R. Mitchell, and Arumugam Wyramuttoo Rasiah.

Medicine.—James K. Steel, Robert H. McKinnon, and Marian E. Owen-Morris.

Surgery.—Robert W. Schuch, William McKim, and James W. Wylie.

Midwifery.—James K. Steel, Collin H. Wickremesinghe, Moss M. Bronstein, Robert W. Schuch, William McKim, Joseph B. Stromier, James W. Wylie, John L. Dearberg, Alexander Rankin, Asit Chandra Bagchi, Charles E. Millen, Catherine Millar, and William T. Baker.

Medical Jurisprudence.—John J. Gilchrist, Manikkathuppahige Thosius Fernando, Stephen B. Stoker, Arthur G. Young, Abdalla Abdel Razzak, Labib Abdel Malik-Mansour, Ian G. Sutherland, George R. Day, Ronald A. Paton, Thomas G. McIntyre, Thomas B. Dobson, Archibald Maxton, Alexander S. Speirs, Maud Heaton, William B. Anderson, John T. W. Gale, John Williams, Gwendoline R. Andrews, James Hendry, William Read, and William W. McGlashan.

DIPLOMA IN PUBLIC HEALTH.

Edwin D. M. Wallace, Malcolm J. Miller, Violet Oswald, Charles Melville, Elizabeth W. Miller, Marjorie H. Mitchell, George A. Pollock, William R. Logan, Jeanie M. Strathie, Jane T. Gilmour, Elsie B. Dickinson, and William B. Watson.

Part I.—George B. Walker, David Robertson, John H. D. Lawrie, David W. C. Tough, Ralph S. Begbie, Desmond S. Malone, Jacobus Johannes de Waal, and Khwaja Samad Shah.

Part II.—Jessie G. Service.

Royal College of Surgeons of Edinburgh.—At a meeting of the College on Oct. 21st, Dr. Arthur Logan Turner was elected President for the ensuing year, Sir David Wallace Vice-President, and Mr. Alexander Miles Secretary and Treasurer.—Mr. David Middleton Greig was awarded the Liston Victoria Jubilee Prize of £100 in recognition of his contributions to practical surgery and surgical pathology.—The following 28 successful candidates, out of 61 entered, who passed the requisite examinations between July 6th and 13th, were admitted Fellows:—

James C. Anderson, Jack R. S. G. Beard, John M. Black, Cecil R. Childs, Bruce M. Dick, Charles S. Fraser, Robert L. Galloway, Israel Goldberg, Robert Grant, John D. Grierson, Dorothy W. Hall, Frederick J. S. Hall, Oscer M. Irwin, Harold W. Johnston, Matilda John, Philip C. Livingston, William J. Macdonald, Harold J. Malkin, Subodh Mitra, John S. Moore, Chandiram H. Primlani, Arnold R. Richards, James H. Robertson, Ronald G. Shackleton, John H. Shaw, Maurice Sourasky, Denis B. Whitlock, and Arthur C. K. Yates.

Dr. Einer Wesley Johnson U.S.A., having passed the requisite examination on Sept. 30th, obtained the diploma of Licentiate of the College.

At recent examinations, out of 20 candidates entered, the following 14 passed the Final Professional Dental Examination and were granted the diploma L.D.S. R.C.S. Edin.:—

John Baker, Philip Henry, Roberta J. T. Morris, Jean Y. Andrew, Henry W. Bambridge, Andrew S. Irving, William C. Archibald, George M. Brown, Noel A. Reid, Evelyn Richardson, Dorothy J. O. Mitchell, Malcolm McDonald, Leslie V. Sherrin, and Harry W. Stewart.

The following candidates passed in the subjects indicated:—

Pathology.—Thomas T. Jamieson, Hector Archibald, and John E. McNicol.

Medicine.—Thomas T. Jamieson and Herbert F. Simpson.

Surgery.—Hector Archibald and John E. McNicol.

Royal Commission on National Health Insurance.—The forty-second meeting of the Commission was held at the Home Office, Whitehall, on Oct. 22nd and 23rd, Lord Lawrence of Kingsgate being in the chair on the 22nd and Sir Arthur Worley on the 23rd. Evidence was given by Mr. J. G. F. Price, Principal Assistant Secretary, Ministry of Labour, on the question of utilising the employment exchanges to certify genuine unemployment for the purpose of dealing more generously with the problem of the arrears penalties under the Health Insurance Scheme. Thereafter Sir Walter Kinnear, Controller of the Insurance Department of the Ministry of Health, Mr. L. G. Brock, Principal Assistant Secretary, and Dr. J. Smith Whitaker, Senior Medical Officer of the Ministry, were examined on a wide range of questions affecting Health Insurance on its administrative and medical sides.

ROYAL SOCIETY OF ARTS.—The next session of this society will be opened on Wednesday, Nov. 4th, at 8.30 P.M., at John-street, Adelphi, London, W.C., when the inaugural address will be delivered by Sir Thomas H. Holland, F.R.S., Chairman of the Council, the subject being the Organisation of Scientific Research Throughout the Empire.

MEDICAL PRACTITIONERS UNION.—A Special Conference on Disciplinary Procedure under the Health Insurance Acts was held by the Union at the Russell Hotel on Oct. 21st. At the afternoon sitting there was an attendance of about 35, and about 20 local medical and panel committees sent representatives. At the close of the proceedings these representatives, together with the chairman (Dr. A. E. Gregg), the secretary (Dr. A. Welply), Dr. Gordon Ward, and the solicitor to the Union (Mr. S. G. Davis), were appointed to form a deputation to lay before the Minister of Health the following resolutions passed at the Conference :—

Proceedings Prior to Hearing.—This Conference is of opinion (*a*) that when comments are invited from a doctor in order to facilitate a decision as to whether a formal hearing is desired the invitation should be accompanied by a warning that the comments supplied are likely to be considered by two statutory committees, and may form the basis of a demand for disciplinary action by the Minister ; (*b*) that before a hearing is arranged, any charge against a doctor should be defined in writing and should state in every case which of the regulations or terms of service is alleged to have been infringed and in what respect the same have been infringed ; and (*c*) that the rules relating to complaints are now so generally known that ignorance of them should no longer be allowed as an excuse for delaying notice of a complaint for more than six weeks after the event in which it originated.

Medical Service Subcommittee.—This Conference is of the opinion (*a*) that the proceedings of the Medical Service Subcommittee should be strictly confined to the charge already formulated ; (*b*) that a medical service subcommittee ought not to found its report, in whole or in part, on evidence to which the practitioner concerned has had no opportunity to reply ; and (*c*) that medical service subcommittees are not suitably constituted for the determination of scientific questions such as frequently come before them.

Removal from Panel.—This Conference is of the opinion (*a*) that successful defendants in these proceedings should be given costs as against the Insurance or other complainant committee on the same scale as those awarded the latter when the doctor's plea fails ; (*b*) that there is nothing in the regulations which can excuse the action of the Ministry in withdrawing from the purview of inquiry committees the right to draw inferences of fact as to the question of a practitioner's fitness to remain on the panel ; (*c*) that the action of the Minister in permitting inquiry committees to refuse evidence of general good repute is entirely indefensible on moral or legal grounds. This Conference protests against the action of the Ministry in hearing evidence which has come to hand subsequently to the sitting of an inquiry committee and which the practitioner can neither know of nor obtain opportunity to rebut. Particular objection is taken to the hearing in this manner of expert evidence tendered in opposition to the practitioner.

Procedure on Appeal.—This Conference is of the opinion that (*a*) appeal tribunals should be composed of absolutely independent persons not identified in any way with the administration of the National Health Insurance Acts ; (*b*) that an appeal tribunal should hear the case de novo and should not have before it any evidence not taken on oath, or otherwise not properly admissible in a Court of Law ; (*c*) that the Minister's decision should be such as is consistent with the report of the Appeal Tribunal ; (*d*) that the report of the Appeal Tribunal should be promulgated within seven days of the conclusion of the hearing ; and (*e*) that the decision of the Minister following appeal or after hearing of representations should be given within one week after the promulgation of the report.

General.—(*a*) This Conference is of the opinion that the standard of service contemplated by the National Health Insurance Acts is the standard enforced by the Courts and no other, and protests against the action of the Ministry in setting up a different standard. (*b*) This Conference calls attention to the great expense in time and money to which a practitioner may be put in defending himself on the same charge before three different tribunals—namely, the Minister, the General Medical Council, and the ordinary courts. (*c*) This Conference recommends that the medical benefit regulations should provide for a general right of appeal to the courts. (*d*) This Conference is of the opinion that the evidence given before it affords ample witness to the injustice of much of the procedure relating to complaints both in theory and in many particular instances, and strongly recommends to the Minister the setting up of a committee, including representatives of this Conference, to report what alterations are desirable.

INSTITUTION OF HEATING AND VENTILATING ENGINEERS.—On Wednesday, Nov. 4th, at 7 P.M., a paper on the Modern Development of Combustion Recording will be read by Mr. J. J. Lassen at Caxton Hall, Caxton-street, Westminster, S.W.

BRITISH MEDICAL ASSOCIATION : COUNCIL DINNER. The fourth annual Council dinner of the British Medical Association was held on Oct. 21st in the Great Hall of the new B.M.A. House, and Dr. R. A. Bolam, who was in the chair, spoke of the pleasure which it gave the officers of the Association to be able to entertain their guests in their own house. The toast of the " Retiring President," proposed with humour and feeling by Sir Richard Luce, gave Mr. J. Basil Hall the opportunity to describe some of the incidents of two happy and busy years. As ambassador for the Association to the Canadian Medical Association and the American Medical Association Mr. Hall had made a happy impression on the other side of the water by his tact and native wit. The " Common Health " was proposed by Sir Thomas Horder, who sketched the diminished mortality of the last 25 years and remarked on the training in preventive medicine obtained by 14,000 panel practitioners who for 12 years past had practised on a system by which they were paid better when their patients were well than when they were ill. He voiced the need for a properly equipped and well-staffed post-graduate school, and concluded an eloquent speech with the three words—education, organisation, coöperation. Captain O. E. Warburg, the Chairman of the London County Council, spoke of the fulfilment of the Council's aim to coöperate with the medical profession in the conduct of school and special clinics. Mr. S. P. Vivian, Registrar-General, also responded. Mr. E. B. Turner, in proposing " Our Guests," specially welcomed two distinguished visitors from South Africa, Dr. W. Watkins-Pitchford and Dr. A. J. Orenstein. Sir Kingsley Wood, who responded, spoke of progress in national health as due largely to a partnership between the State, the local authorities, the medical profession, and the great voluntary agencies. He was himself a believer in voluntary health service ; too many people, he thought, were looking to the State for things that they ought to be doing themselves. Voluntary effort was the pride of this country and the general practitioner the backbone of medical organisation. Sir Holburt Waring, who also replied, hoped soon to see an amendment to the Medical Act whereby treatment of disease was limited to men having a proper medical education. Dr. C. E. Douglas proposed " The Chairman," and Dr. Bolam, in responding, foreshadowed his intention shortly to retire from the onerous position which he has ably filled for so long. Dr. Alfred Cox was incited to speak a few words regarding his impending visit to South Africa. An admirable programme of music filled in the intervals.

AT a general meeting of the Surrey branch of the British Medical Association (Kingston-on-Thames Division), to be held at Surbiton Hospital on Tuesday, Nov. 3rd, at 8.45 P.M., an address will be delivered by Dr. Norman Haire on Birth Control and Contraceptive Methods.

ORTHOPÆDIC AFTER-CARE.—As the outcome of the work of the Shropshire Orthopædic Hospital and the Agnes Hunt Surgical Home at Oswestry, an after-care committee for Shrewsbury and the district has just been formed. From a wooden shelter erected by Miss Agnes Hunt in her garden 25 years ago, orthopædic work in Shropshire has developed until the hospital contains 300 beds. Shrewsbury was the first town in the world to open a clinic for cripples.

LANCASHIRE INSURANCE COMMITTEE AND THE SPAHLINGER TREATMENT OF TUBERCULOSIS.—On Oct. 19th at Preston the Lancashire Insurance Committee discussed at length a recommendation from its Spahlinger Committee that a conference of representatives of insurance, public health, approved society, tuberculosis and panel committees in Lancashire be called with a view to action being taken in regard to the Spahlinger treatment for tuberculosis. A report from Dr. G. L. Cox, county tuberculosis officer, was read, in which Dr. Cox suggested that the only way to solve the question was an extended trial through the Medical Research Council and the Joint Tuberculosis Council for England and Wales and through them by the tuberculosis branch of the public health service. A letter was read from the Ministry of Health, dated Oct. 31st, 1923, in which, referring to the visit of a deputation from the Lancashire Insurance Committee, it was clearly stated that the committee could not spend money from its funds on an inquiry into the treatment. Ultimately the committee passed a resolution that a meeting of representatives of the various committees in the county interested be called to hear addresses with a view to their reporting to their respective committees.

Royal Society of Medicine.—Commencing on Tuesday, Nov. 3rd, the Library of the Royal Society of Medicine will be kept open until 10 P.M. on two evenings of the week—namely, Tuesdays and Fridays.

London Hospital Medical College. — The Schorstein Memorial Lecture will be delivered by Sir Humphry Rolleston on Friday, Dec. 4th, at 4.15 P.M., in the Anatomical Theatre of the College. The subject will be Lymphadenoma.

Liverpool: Royal Southern Hospital Extension.—A scheme for the erection of an annexe to this hospital is in progress, and it is hoped in the near future to take down some old property at the corner of Hill-street and erect on the site a four-storey building close to the hospital, which would provide extra accommodation for the staff and 20 additional beds for patients.

Hackney Maternity Centre.—The Duchess of York last week opened a maternity and child welfare centre in Lower Clapton-road, Hackney, which, it is hoped, will greatly facilitate work which has been going on steadily for a long time past. So successful has this work been that, although Hackney has a population exceeding a quarter of a million and an average of 5000 births a year, last year it had the lowest infantile death-rate on record.

Cancer Hospital, Fulham-road, London.—The Duke of Connaught last week opened two new theatres which have been provided at this hospital in memory of the late Sir Charles Ryall, who was surgeon there from 1898 to 1922. The theatres, which are on the top floor, are arranged as one unit, so that while one of them is occupied the other can be got ready for another operation. The galleries for the students run from end to end of the building, the anæsthetic rooms and other appurtenances being close at hand. The work involved the construction of a new maids' home, the old one having been absorbed by the alterations. Consequently the cost reached £50,000.

Judgment for Durban Doctor.—Our South African correspondent writes: Before Mr. Justice Carter and a special jury the case was concluded at Durban on Sept. 26th, in which Margaret Scott Ferguson, proprietress of a boarding-house at Isipingo, near Durban, sued Dr. C. D. Relton, of Durban, for £1599 damages for alleged wrongful incarceration in the mental hospital, Pietermaritzburg. A verdict was given for the defendant, with costs. The jury recommended the desirability of establishing an observation ward, to be apart from the mental hospital, so that patients could stay there prior to their removal to the hospital itself. Mr. Justice Carter commented favourably on the jury's recommendation.

Newcastle: Post-graduate Study.—The general course of post-graduate study, which commenced at the Royal Victoria Infirmary on Oct. 1st, is being attended by 51 practitioners. The meetings are held on Thursday afternoons, and instruction is given each day in clinical medicine, clinical surgery and pathology, including post-mortem demonstrations. Three special lectures have been arranged as part of the general course, the first of which, on the Post-Operative Treatment of Tonsils and Adenoids, was delivered by Dr. J. Dunlop Lickley on Oct. 1st. Dr. R. A. Bolam will lecture on Nov. 5th on the Present Day Treatment of Syphilis, and Prof. David Burns will give the third lecture on Dec. 3rd on Insulin. A special course in midwifery and gynæcology is being conducted at the Princess Mary Maternity Hospital by Prof. Ranken Lyle and Dr. E. Farquhar Murray. In addition to these courses, which form part of the routine post-graduate instruction of the University of Durham, an intensive course of a fortnight's duration commenced on Oct. 12th. This course was arranged in conjunction with the Ministry of Health and the Northumberland Panel Committee for the benefit of panel practitioners in the rural areas of Northumberland, and was limited to 12 members, who were selected from the applicants by the Northumberland Panel Committee. The Panel Committee, after careful consideration, elected to expend in this way part of their share of the special £10,000 fund, which was also applied to the provision of locums for the members of the class. A very comprehensive syllabus comprising some 60 lectures and demonstrations was arranged, occupying each morning and afternoon. The first hour of each day was devoted to a course of clinical pathology designed to meet the requirements of general practitioners. The remaining hours were occupied by classes in medicine, surgery, midwifery, gynæcology, eye diseases, diseases of infancy, and so forth, the individual subjects being selected with the object of enabling the members to understand the significance and practical application of recent advances in knowledge. The instruction was essentially clinical, and the limited size of the class facilitated the examination of a large number of cases by each member.

Guest Hospital and Eye Infirmary, Dudley.—The recent bazaar for the liquidation of the debt upon this institution has produced a net profit of £14,117.

The Editor of the "Medical Who's Who" asks us to request all practitioners not having done so to return their forms immediately to 8, Stone Buildings, Lincoln's Inn. The 1926 edition is now going to press, and will, it is expected, be ready early in the New Year.

Rontgen Society.—A general meeting of this society will be held on Tuesday, Nov. 3rd, at 8.15 P.M., in the British Institute of Radiology, 32, Welbeck-street, London, W., when Mr. F. W. Aston, D.Sc., F.R.S., will deliver his presidential address on Atoms and X Rays.

Colwyn Bay Hospital.—The new Colwyn Bay and West Denbighshire Hospital was opened on Oct. 17th by Lord Colwyn. It has developed from the smaller hospital erected about a quarter of a century ago. There are in all 60 beds for patients, the old block being used for administrative purposes. The total cost of the hospital, including the equipment and wiping out of a debt of £440, was £35,285. The receipts towards that sum—including £10,000 from the British Red Cross Society and £19,000 from two garden fêtes—come to a total which leaves a balance of £2500. This sum has now been raised so that the hospital was opened free of debt.

University of Manchester.—*Travelling Fellowship in Psychological Medicine.*—Through the generosity of Mr. Ernest A. Knight, hon. treasurer of the University of Manchester, a selected medical graduate will be enabled, this winter, to visit the United States. His mission will be to study and eventually to report upon the methods used in approved institutions, to investigate the part played by mental factors in the development, treatment, and cure of mental disorders. Should the University so desire, he will be required on his return to deliver an address on the subject of his investigation. The competition was open to those who had obtained or had entered upon a course for the diploma in psychological medicine of the University. It is hoped to announce the award at an early date. The purpose of the Fellowship is that of the Knight Prize, which is offered annually in the University, to encourage the study of psychological factors in the causation and cure of mental disturbances.

Cancer Campaign in Manchester.—At a public meeting held in Manchester on Oct. 23rd, called by the recently-formed Manchester Committee on Cancer, it was resolved to issue an appeal for £20,000 with which "to carry out in Manchester during the next three years an approved scheme of investigation into the disease of cancer." Dr. W. E. Gye, pathologist to the National Institute of Medical Research, was the chief speaker. The appeal was particularly directed to the commercial community to support the fund on the ground that it was one of the best investments anybody could participate in. Dr. Veitch Clark, medical officer of health for the city, said that the committee intended to follow the meeting up by a personal appeal to all whom they thought they could approach with success; but at the same time they wanted to reach the general public and impress them with the importance and urgency of the work and the appeal. The Chairman of the Royal Infirmary Board said his board was whole-heartedly in accord with the scheme.

The late Dr. T. Drysdale.—Dr. Theodore Drysdale, of Cadogan-place, Chelsea, died on Oct. 8th, aged 45. He was born in the Central Provinces of India, and was educated in England at St. Paul's School and Jesus College, Cambridge. He received his medical training at St. George's Hospital, qualifying M.R.C.S. Eng., L.R.C.P. Lond. in 1904, and graduating M.B., Ch.B. Camb. the following year. After holding resident hospital appointments, including that of anæsthetist to the Cancer Hospital, Fulham-road, he went into partnership with the late Dr. Reid, of Sloane-square. A keen and energetic worker, he gradually built up one of the largest private practices in London, specialising to a considerable extent in midwifery. Dr. Drysdale was a prominent athlete. While at Cambridge he gained his Rowing Blue in 1902, won the Colquhoun Sculls in the same year, and obtained his Rugby Football Blue in 1900 and 1901. Throughout his professional life he "kept fit" by playing squash racquets, and represented England *v.* America at this game in 1923. A colleague writes of him: "Dr. Drysdale was a man of great personality, eminently proficient in all branches of his profession, and sound in judgment. He had little time for reading or writing, but, nevertheless, kept himself well up to date with all forms of treatment. He was competent, alert, and above all things loyal, a quality all too rare in these days. Though never in the limelight, to which he objected above all things, his loss, nevertheless, will be felt throughout London."

The death has occurred at Edinburgh of Dr. John Robertson Henderson, C.I.E., F.R.S.E., formerly curator of the Madras Museum and professor of zoology in the Madras Christian College. Dr. Henderson was an authority on Indian crustacea and South Indian numismatics.

West Riding Association of Edinburgh University Graduates.—The annual dinner will be held at the Great Northern Hotel, Leeds, on Wednesday, Nov. 18th, at 7.15 p.m., when Mr. Alexander Miles will be the guest of the association. The dinner will be preceded by a general meeting at 6.30 p.m. Any graduate desiring information should apply to the hon. secretary, 33, Manor-row, Bradford.

Norwood Sanatorium for the Treatment of Inebriety and Drug Addiction.—Dr. Francis Hare has resigned the office of medical superintendent of the Beckenham branch of this sanatorium on grounds of ill-health. His place as medical superintendent at the Mansion, Beckenham Park, Kent, will be taken by Dr. A. W. George, who has been acting as assistant to Dr. Hare. At Rendlesham Hall, the Suffolk branch of the sanatorium, there is a park of 450 acres, containing a private nine-hole golf course.

Doncaster's Open-air School for Defective Children.—The Doncaster Education Committee are about to build an open-air school to accommodate 240 children who are mentally or physically too backward to be taught at the ordinary schools. The children will be under the constant care of the medical officer of health. Rooms for medical examination and treatment will be provided. It is intended to provide the children with midday meals at the school. Both the back and front of the building will be completely thrown open according to the state of the weather and the direction of the wind. Heat will be radiated from the panels of the walls. The school will be provided with about three acres of garden in which the children can play and practise horticulture.

Hospitals and Road Accidents.—In an appeal for money to reduce the debt upon the Hampstead General and North-West London Hospital, it is stated that a large number of motoring and road accidents have been treated during the last few months and that a heavy burden has thus been thrown upon the institution. Commenting upon this statement, Mr. E. W. Morris, house-governor of the London Hospital, points out that the rapidly growing number of accidents of this kind adds seriously to the difficulty of finding room there for the waiting cases, which now number 1100. Mr. Morris adds that if in cases where compensation is paid for street accidents a contribution were made to the hospitals an addition to revenue would be obtained that would enable it to meet the demands of the waiting-list. It is pointed out by a motor-car insurance company that there are occasions when insurance companies do make contributions to hospitals in consideration of their services to injured persons.

The late Dr. E. C. Hinde.—Eric Clark Hinde, M.B., B.S. Lond., who died on Oct. 20th at the age of 30, was educated at Bootham School, York, and entered Guy's Hospital in 1913 with a science scholarship. His studies were interrupted by a period of service with the Friends' Ambulance Unit in Flanders, when he was chiefly occupied with tracking typhoid contacts. After qualifying M.R.C.S. in 1917 he was house physician at the Queen's Hospital for Children in London, and served again in France before taking his London medical degree in 1920. He started in practice, first as assistant and then as partner, with Dr. H. T. Gillett, in Oxford, where he was anæsthetist to the Wingfield Hospital and assistant in the Throat and Ear Department of the Radcliffe Infirmary. In December, 1922, he developed laryngitis, which proved to be tuberculous, and spent the last three years in a consistent, but unavailing search for health at home and abroad. His early death removes an attractive personality and cuts short a career of considerable promise.

Donations and Bequests.—Mr. James Charles Marshall, of Eastbourne, formerly chairman of Marshall and Snelgrove, Ltd., besides other bequests, gave 1000 preference shares in Debenhams, Ltd., to the Cottage Homes, Mill Hill, and 500 such shares each to Middlesex Hospital, the London Fever Hospital, and the London General Porters' Benevolent Association.—Cheques for £1000 were presented to the Lord Mayor of Liverpool from the Liverpool Fruiterers Association for the endowment of beds bearing the names of the chief magistrate and the lady mayoress in the Royal Liverpool Children's Infirmary and the Liverpool Maternity Hospital.—Mr. R. Rees Thomas, of Llanbedrog, Carnarvonshire, has sent a cheque for £1000 in aid of the extension of the Carnarvonshire and Anglesey Infirmary, Bangor.—The Manchester Royal Infirmary has received from the executors of the late Mr. W. H. Armitage a legacy of £1000, and £10,000 on account from the bequest of the late Miss Ann Russell, of Cheetham Hill. Miss Russell left the residuary portion of her estate, amounting to over £100,000, to six Manchester charities.—Mrs. Fanny Davis, Exmouth, left £500 each to Exmouth Cottage Hospital and the Devon and Exeter Dental Hospital.—In response to the Leeds University's appeal for £500,000, the first list of subscriptions includes donations and promises amounting to £115,370. Among the larger donations contributed are £20,000 from Messrs. Joshua Tetley and Son, Ltd., brewers, Leeds: £18,000 from the Clothworkers' Company, London; £10,000 from an anonymous subscriber; £5000 each from Mr. H. J. Bouring, Kirkby Lonsdale; Sir Algernon Frith, Bt., Knaresborough; and Messrs. Reckitt and Sons, Ltd., Hull; £3000 each from Messrs. E. J. Arnold and Sons, printers, Leeds; Messrs. A. W., Sir Ernest, and J. Bain; Colonel T. Walter Harding, Cowbridge; and the Misses E. G. and E. M. Lupton, Leeds; the *Daily Mail*, London, 2000 guineas.—A bazaar at Dudley, Worcestershire, promoted last June to wipe out the debt of £10,000 on the local hospitals, has had a remarkable success, as the net proceeds amounted to considerably over £14,000.

Medical Diary.

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning.

SOCIETIES.

ROYAL SOCIETY, Burlington House, Piccadilly, W.

Thursday, Nov. 5th, 4.30 p.m.—*Papers to be Read:* L. Ballif, J. F. Fulton, and E. G. T. Liddell: Observations on Spinal and Decerebrate Knee-jerks with Special Reference to their Inhibition by Single Break-Shocks (communicated by Sir Charles Sherrington, P.R.S.). K. Furusawa: Muscular Exercise, Lactic Acid, and the Supply and Utilisation of Oxygen. Part XIII. The Gaseous Exchanges of Restricted Muscular Exercise in Man (communicated by Prof. A. V. Hill). K. Furusawa: A Spirometer Method of Studying Continuously the Gaseous Metabolism of Man During and After Exercise (communicated by Prof. A. V. Hill). D. T. Harris: The Effect of Light on the Circulation (communicated by Prof. E. H. Starling. *Papers to be Read in Title only:* A. V. Hill: The Surface Tension Theory of Muscular Contraction. J. F. Fulton and E. G. T. Liddell: Electrical Responses of Extensor Muscles during Postural (Myotatic) Contraction (communicated by Sir Charles Sherrington). L. N. Katz: On the Supposed Pluri-segmental Innervation of Muscle Fibres (communicated by Prof. A. V. Hill). L. N. Katz and C. N. H. Long: Lactic Acid in Mammalian Cardiac Muscle. Part I. The Stimulation Maximum (communicated by Prof. A. V. Hill). H. J. G. Hines, L. N. Katz, and C. N. H. Long: Lactic Acid in Mammalian Cardiac Muscle. Part II. The Rigor Mortis Maximum and the Normal Glycogen Content (communicated by Prof. A. V. Hill). Phyllis Kerridge, L. N. Katz, and C. N. H. Long: Lactic Acid in Mammalian Cardiac Muscle. Part III. Changes in Hydrogen-ion Concentration (communicated by Prof. A. V. Hill). W. E. Garner: The Mechanism of Muscular Contraction (communicated by Prof. A. V. Hill). R. W. Riding and E. C. C. Baly: The Occurrence of Helium and Neon in Vacuum Tubes. O. W. Richardson: Structure in the Secondary Hydrogen Spectrum. III. T. R. Merton and J. G. Pilley: On the Excitation of the Band Spectrum of Helium. H. Hartley and J. E. Frazer: The Conductivity of Uni-univalent Salts in Methyl Alcohol at 25° C. (communicated by Prof. J. W. Nicholson). C. S. Beals: The Arc Spectrum of Palladium: its Zeeman Effect and Spectral Type (communicated by Prof. A. Fowler). N. Ahmad: Further Experiments on the Absorption and Scattering of γ Rays (communicated by Sir Ernest Rutherford). R. A. R. Tricker: A Determination of the Variation of the Mass of the Electron with Velocity, using Homogeneous β Rays. Preliminary Results (communicated by Sir Ernest Rutherford). E. H. Boomer: Experiments on the Chemical Activity of Helium (communicated by Sir Ernest Rutherford). R. M. Wilmotte: On the Construction of a Standard High Frequency Inductive Resistance and its Measurement by a Thermal Method (communicated by Sir Joseph Petavel). R. B. Brode: The Absorption Coefficient for Slow Electrons in the Vapours of Mercury, Cadmium and Zinc (communicated by Prof. F. A. Lindemann). P. Kapitza and H. W. B. Skinner: The Zeeman Effect in Strong Magnetic Fields (communicated by Sir Ernest Rutherford). F. R. Weston: The Flame Spectra of Carbon Monoxide and Water Gas. Part II. (communicated by Prof. W. A. Bone). H. S. Hirst and E. K. Rideal: The Thermal Decomposition of Nitrogen Pentoxide at Low Pressures (communicated by Sir William Pope). R. W. Gurney: The Number of Particles in the Beta-Ray Spectra of Radium B and Radium C (communicated by Sir Ernest Rutherford).

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

Tuesday, Nov. 3rd.

ORTHOPÆDICS: at 5.30 P.M. (Cases at 5 P.M.)
Cases:
Mr. R. C. Elmslie: Unintentional Arthroplasty of Hip-joint.
Mr. St. J. D. Buxton: Charcot's Spine.
Other cases will be shown.
Specimen:
Mr. Blundell Bankart: Ovarian Carcinoma of the Scapula.

PATHOLOGY: at 8.30 P.M., at the Imperial Cancer Research Fund Laboratories, 8, Queen-square, W.C.

Wednesday, Nov. 4th.

SURGERY: at 8.30 P.M.
Discussion on
Precancerous States.
Openers:
The President (Sir Lenthal Cheatle), Mr. Sampson Handley, Dr. Sequeira, Mr. Zachary Cope.

Thursday, Nov. 5th.

OBSTETRICS AND GYNÆCOLOGY: at 8 P.M.
Specimens:
Mr. T. G. Stevens:
(1) Fibromyoma of the Uterus weighing 47 lb. 5 oz. Removal.
(2) Large Cystic Tumour of the Liver simulating an Ovarian Cyst.
Short Communication:
Dr. D. W. Roy and Dr. R. Donaldson: A Case of Early Endometrioma of the Fallopian Tube.
Dr. Wilfred Shaw: The Origin of the Lutein Cells of the Corpus Luteum.
Paper:
Mr. Victor Bonney: Myomectomy as the Operation of Election for Uterine Fibroids.

Friday, Nov. 6th

LARYNGOLOGY: at 5 P.M. (Cases at 4 P.M.)
Cases and *Specimens* will be shown by Mr. M. Vlasto, Dr. Dan McKenzie, Sir James Dundas-Grant, Dr. O. Popper, Dr. A. L. Macleod, Mr. Leslie Powell, and others.

ANÆSTHETICS: at 8.30 P.M.
Discussion on
Anæsthetics in Children, to be opened by Dr. Harold Sington.
Other Speakers:
Dr. J. Birt, Mr. Twistington Higgins, and Mr. Pitts.

STUDY OF DISEASE IN CHILDREN: Members of this Section are specially invited to attend the above meeting.

Saturday, Nov. 7th.

OTOLOGY: at 10.30 A.M. (Cases at 9.45 A.M.)
Cases will be shown by Mr. Ibbotson, Mr. Layton, Mr. Just, and others.
Paper:
Mr. A. R. Tweedie: The Otolith Reactions (with demonstration).
A discussion will follow.

ROYAL INSTITUTION, 21, Albemarle-street, W.
Monday, Nov. 2nd.—5 P.M., General Meeting of the Members.

ROYAL SOCIETY OF ARTS, John-street, Adelphi, W.C.
Wednesday, Nov. 4th.—8.30 P.M., Sir Thomas H. Holland, F.R.S.: Inaugural Address on the Organisation of Scientific Research throughout the Empire.

MEDICAL OFFICERS OF SCHOOLS ASSOCIATION, 11, Chandos-street, Cavendish-square, W.
Friday, Nov. 6th.—4.45 P.M., Dr. A. I. Simey: The Prophylaxis of the Common Cold and Febrile Catarrhs.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

ROYAL COLLEGE OF PHYSICIANS, 1, Pall Mall East, S.W.
Thursday, Nov. 5th.—5 P.M., Dr. E. Bramwell: The Myopathies. (Bradshaw Lecture.)

THE FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, London, W.
Monday, Nov. 2nd, to Saturday, Nov. 7th.—Fellowship of Medicine Lecture, Medical Society, 11, Chandos-street. Mon., 5.30 P.M., Dr. J. Campbell McClure The Climatic Treatment of Tuberculosis.—Chelsea Hospital for Women, Arthur-street, S.W. Post-graduate course in Gynæcology, lectures and demonstrations daily, pathology, and operations.—London School of Hygiene and Tropical Medicine, Endsleigh-gardens. Tues. and Thurs., lecture-demonstration by Dr. G. C. Low and Dr. Manson-Bahr.—London Lock Hospital, Dean-street, W. Comprehensive course. Instruction in the Out-patient Department every day and lectures.

UNIVERSITY COLLEGE, London.
Monday, Nov. 2nd.—5 P.M., Mr. R. J. Lythgoe: The Physiology of Hearing and Vision. Seventh lecture.
Wednesday.—5 P.M., Last lecture.

ST. JOHN'S HOSPITAL, 49, Leicester-square, W.C.
Tuesday, Nov. 3rd.—5 P.M., Dr. Knowsley Sibley: Principles of Treatment. Local.
Thursday, Nov. 5th.—5 P.M., Dr. A. M. H. Gray: Eruptions Due to External Irritants.

NATIONAL HOSPITAL FOR THE PARALYSED AND EPILEPTIC, Queen-square, Bloomsbury, W.C. 1.
POST-GRADUATE COURSE: October–November, 1925.
Clinical Lectures and Demonstrations.
Monday, Nov. 2nd.—2 P.M., Out-patient Clinic: Dr. Hinds Howell. 3.30 P.M., Headache and its Treatment: Dr. Risien Russell.
Tuesday, Nov. 3rd.—2 P.M., Out-patient Clinic: Dr. Walshe. 3.30 P.M., Peripheral Neuritis: Dr. Grainger Stewart.
Thursday, Nov. 5th.—2 P.M., Out-patient Clinic: Dr. Kinnier Wilson. 3.30 P.M., Hemiplegia: Dr. Walshe.
Friday, Nov. 6th.—2 P.M., Out-patient Clinic: Dr. Adie. 3.30 P.M., Electro-therapy in Lesions of Peripheral Nerves: Dr. Bailey.
The Fee for the Course, including Pathology Lectures, is £5 5*s.* For those who hold Perpetual Tickets the fee is £3 3*s.*

Course of Lectures and Demonstrations on the Pathology of the Nervous System.
Thursday, Nov. 5th.—12 noon, Acute Inflammation: Dr. J. G .Greenfield.

Course of Lectures and Demonstrations on the Anatomy and Physiology of the Nervous System.
Monday, Nov. 2nd.—12 noon, The Basal Ganglia: Dr. J. L. Birley.
Dr. H. J. Macbride is giving a Course of Eight Clinical Demonstrations, chiefly on Methods of Examination of the Nervous System, in the wards at 10 A.M. on Tuesdays and Fridays. The fee for this Course is £2 2*s.*
Mr. Armour and Mr. Sargent operate at the Hospital on Tuesdays and Friday mornings at 9 A.M., or at such other times as may be announced.
Any part of the Course may be taken separately. Special arrangements will be made for those unable to take the whole Course.
Fees should be paid to the Secretary of the Hospital at the Office on entering for the Course.
J. G. Greenfield, Dean of Medical School.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N.
Thursday, Nov. 5th.—3 P.M., Mr. J. Howell Evans: Cases of Affections of the Breast. 4.30 P.M., Mr. W. Ibbotson: Hoarseness, its Causation, Diagnosis, and Treatment.
Daily: In-patient and Out-patient Clinics in General and Special Departments, Operations, &c.

QUEEN CHARLOTTE'S MATERNITY HOSPITAL, Marylebone-road, N.W.
Thursday, Nov. 5th.—5 P.M., Mr. A. W. Bourne: Common Obstetric Difficulties.

MANCHESTER ROYAL INFIRMARY POST-GRADUATE COURSE.
Tuesday, Nov. 3rd.—4.15 P.M., Dr. D. E. Core: The Oculo-Motor Apparatus from the Physician's Point of View.
Friday, Nov. 6th.—4.15 P.M., Prof. E. D. Telford: The Diagnosis of Chronic Arthritis in Children.

ANCOATS HOSPITAL POST-GRADUATE LECTURES.
Thursday, Nov. 5th.—4.15 P.M., Mr. H. Platt: The Treatment of Common Fractures with Practical Demonstrations.

ROYAL INSTITUTE OF PUBLIC HEALTH, 37, Russell-square, W.C.
Wednesday, Nov. 4th.—4 P.M., Dr. E. Farquhar Buzzard: The Prevention and Arrest of Nervous Disease.

PEOPLE'S LEAGUE OF HEALTH, Fyvie Hall, Regent-street Polytechnic.
Friday, Nov. 6th.—6 P.M., Prof. H. R. Kenwood: Hygiene.

Appointments.

George, A. W., M.D., C.M. Edin., has been appointed Resident Medical Superintendent, Norwood Sanatorium, Beckenham Park, Kent.

Kirk, Miss F. S., M.B., Ch.B. Glasg., D.P.H., to the combined post of Demonstrator in Pathology in the University of Sheffield, and Assistant Pathologist to the Jessop and Children's Hospitals.

Parry, C. P., M.D., C.M. Edin., to be one of the Medical Referees under the Workmen's Compensation Act, 1906, for Circuit 31, the Districts of the Aberayron, Cardigan, Carmarthen, Llandilo Fawr, &c.

Polson, C. J., M.B., Ch.B. Birm., Demonstrator of Pathology, University of Manchester.

Paddington Green Children's Hospital: Dunstan, C. K., M.B., Ch.M. Sydney, House Physician; Mundell, F. G., M.B., B.S. Durh., House Surgeon.

Certifying Surgeons under the Factory and Workshop Acts: Ling, C. C., L.R.C.P. Lond., M.R.C.S. (Ramsgate); Wilson, G., M.B., C.M. Aberd. (Nairn); Gabb, H.P., L.R.C.P. Lond. M.R.C.S. (Guildford); Moran, L., M.B., B.Ch. N.U.I. (Looe).

Vacancies.

For further information refer to the advertisement columns.

Aberdeen Royal Infirmary.—Asst. S. to Ear, Nose, and Throat Dept.

Bath, Royal Mineral Water Hospital.—R.M.O. At rate of £130.

Birmingham City Hospitals for Infectious Diseases.—Sen. Asst. M.O. £400.

Birmingham General Hospital.—Asst. P.

Birmingham Union, Selly Oak Hospital—Res. Asst. M.O. £300.

Charing Cross Hospital Medical School.—Lectureship in Hygiene.

Chelsea Hospital for Women.—Anæsthetist. £21.

City of London Hospital for Diseases of the Heart, &c., Victoria Park, E.—H.P. at rate of £100.

City of London Maternity Hospital, City-road, E.C.—Obstet. S. Also Asst. Obstet. S.

Coventry and Warwickshire Hospital.—Res. Jun. H.S. £135. Also Res. H.P. £125.

Hospital for Sick Children, Great Ormond-street, W.C.—Med. Reg. and Pathologist. £300.

Infectious Hospitals Service, Metropolitan Asylums Board.—Jun. Asst. M.O. £500.

Manchester, Barnes Convalescent Hospital, Cheadle.—Res. M.O. £250.

Middlesex County Council.—Asst. M.O. £600.

Northampton General Hospital.—Hon. Asst. S.

Oxford, Radcliffe Infirmary and County Hospital.—H.P., H.S., Cas. H.S., and Obstet. H.P. All at rate of £120.

Oxford, Warneford Mental Hospital.—Asst. M.O. £250.

Queen Mary's Hospital for the East End, Stratford, E.—Hon. Asst. S.

Royal Eye Hospital, St. George's Circus. S.E.—Hon. Asst. S.

Royal Free Hospital, Gray's Inn-road, W.C.—H.P., First H.S., Second H.S. and Asst. Cas. O. Obstet. H.S., Gynæcological H.S. Also Asst. for X Ray Dept.

Royal Northern Hospital.—H.S. At rate of £70. Also Two Cas. O.'s. At rate of £90.

St. John's Hospital for Disease of the Skin, 49, Leicester-square, W.C.—Pathologist. £100.

St. Mary's Hospital for Women and Children, Plaistow, E.—Hon. Dental S.

Salford Education Committee.—Asst. Sch. M.O. £600.

Stockport Infirmary.—Third Res. M.O. £175.

Sudan Medical Service.—Three M.O.'s. £E.720.

University of London.—Associate Examiners.

Western Skin Hospital, 44, Hampstead-road, N.W.—Hon. Radiologist.

Westminster Hospital, S.W.—M.O. Two Asst. M.O.'s to X Ray Dept. Also Asst. Path.

Willesden, Park Royal Hospital, Acton Lane.—Second Asst. M.O. £400.

York Maternity Hospital.—H.S. £250.

Births, Marriages, and Deaths.

BIRTHS.

BARLOW.—On Oct. 21st, to Eileen S. P. Barlow, M.B., Ch.B., the wife of A. Malcolm Barlow, M.R.C.S., L.R.C.P.—a daughter.

CARLILL.—On Oct. 24th, at North Gate, Regent's Park, the wife of Hildred Carlill, M.D., of a son.

COATS.—On Oct. 20th, at Glasgow, the wife of Captain D. H. Coats, R.A.M.C., of a daughter.

DOHERTY.—On Oct. 20th, at a nursing home at Croydon, the wife of W. D. Doherty, M.Ch., F.R.C.S., of a daughter.

SOWRY.—On Oct. 22nd, at Newcastle, Staffs, the wife of G. H. Sowry, M.D., M.R.C.P., of a son.

MARRIAGES.

JACKSON—HADLEY.—On Oct. 21st, at St. Luke's Church, Reigate, Lawrence Nelson Jackson, M.B., to Margaret C. N. Hadley, M.B., daughter of Dr. and Mrs. Wilfred Hadley, of Reigate.

SCOTT—HEWETT.—On Oct. 17th, at St. Margaret's Church, Barking, Dr. John Murray Scott, to Valentine, third daughter of R. M. Hewett, J.P., of Roden Lodge, Barking, Essex.

DEATHS.

DUNN.—On Oct. 19th, at Mentone, suddenly, William Edward Nickolls Dunn, M.B. Lond., and Major, R.A.M.C., aged 54.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

BRADFORD'S HOSPITAL APPEAL.—Owing to trade depression, it is announced that Bradford's public appeal for £500,000 towards the erection of a new hospital to take the place of the present Royal Infirmary has been deferred. Shortly before the war a site for the new hospital was obtained and plans were prepared for a new building.

Notes, Comments, and Abstracts.

THE PREVENTION AND ARREST OF RHEUMATIC DISEASE.*

BY MATTHEW BURROW RAY, D.S.O., M.D. EDIN.,
HON. SEC., BRITISH SUBCOMMITTEE, INTERNATIONAL COMMITTEE ON RHEUMATISM.

PUBLIC attention is being increasingly focused on the serious position created by the heavy incidence of rheumatic disease in this country. Its far-reaching effects on industry have been made manifest by the publication of Report No. 23 in the series on public health and medical subjects issued last year by the Ministry of Health, entitled the Incidence of Rheumatic Diseases,[1] where it was shown that practically one-sixth of the entire sick absence in this country from all diseases was due to those classed as "rheumatic," and reports from other countries show a similar state of affairs. We may say that the problem of the incidence of rheumatic diseases is one which is seriously affecting the whole of Northern Europe. A committee on rheumatism has been appointed by the International Society of Medical Hydrology and from it a subcommittee to deal with its incidence in this country, which has for its object the formulation of a plan for concerted action in a campaign against rheumatic disability.

Nomenclature and Classification.

If we were asked for a definition of the precise meaning we are to attach to the term rheumatism or rheumatic disease, we could only say that it is a comprehensive name that is applied in an indiscriminate manner to a group of diseases which differ widely in their causation and manifestation. From a scientific point of view, therefore, the name has little to recommend it, and it has frequently been suggested that it be abolished from medical terminology altogether, or, at any rate, limited to those acute and subacute conditions known as rheumatic fever or acute and subacute rheumatism. On the other hand, it has, by reason of its long-continued use, acquired a certain meaning, and if it is regarded purely as a "clinical concept" and not as a "disease picture," its retention in the present state of our knowledge may be justified. Chronic joint changes and painful affections of the connective tissue have obviously little or no relation to those conditions known as acute and subacute rheumatism where the chief damage falls on the heart, and the arthritic changes are merely transient though doubtless very painful in some instances. Indeed, it is a common clinical observation that in the most severe forms of acute rheumatism the joints may escape altogether. We would say then that rheumatic disease appears to fall naturally into three main groups. We have those acute and subacute conditions which are classified under the heading of rheumatic fever which we should place in the first group. The second group would comprise all those painful and disabling conditions which affect the connective tissue that forms the aponeuroses and sheaths of the muscles and nerves. The third group consists of a medley of joint affections chiefly marked by their progressive nature, chronicity, and crippling effects.

These groups are further subdivided into nine subgroups as follows: Group A. (1) rheumatic fever or acute rheumatism; (2) subacute rheumatism, including rheumatic purpura. Group B. (3) muscular rheumatism, sometimes called chronic rheumatism, includes myalgia, fibrositis, pleurodynia, and torticollis; (4) lumbago; (5) sciatica and brachial neuritis. Group C. (6) rheumatoid arthritis; (7) osteo-arthritis, including malum coxæ senilis and most cases of spondylitis deformans; (8) gout, acute and chronic; (9) chronic joint change unclassifiable.

It must be clearly understood that the above is not a classification of arthritis. The whole question of the classification of the arthritides is a very vexed one.

Rheumatic Fever.

Although rheumatic fever is usually regarded as an infective disease, the causal organism has not yet been definitely identified. The disease is essentially one of temperate and humid climates and is apparently rarely found in the tropics. So far as this country is concerned the Ministry of Health point out in their report that it shows a heavy incidence in Bristol, Nottingham, and Cardiff, and a light incidence in the South-Eastern Division and Cornwall.

It is a hopeful sign that the public is beginning to recognise the devastating effect on the health of the community brought about by the occurrence of rheumatic fever in early life. It must be emphasised that it is essentially a disease of childhood. We know comparatively little about its various modes of onset and also what really constitutes the disease. Too much attention is paid to the joint conditions which, from the point of view of prognosis, are of little moment. Many children have had their lives ruined by the failure to recognise the disease in the absence of joint changes.

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* Abstract of an address delivered at the Royal Institute of Public Health on Oct. 21st, 1925.

[1] THE LANCET, 1924, i., 451.

Prevention.—The question of the prevention of acute rheumatism really resolves itself into one of early recognition of the condition. In the first place we have to learn to differentiate the type of child likely to be affected therewith. With the routine examination of all school-children there should be no difficulty in setting aside for special consideration in each school those children who exhibit signs of this diathesis. They are usually pale and anæmic and sweat readily, and careful examination will reveal the presence of small subcutaneous nodes, to which Vincent Coates and R. E. Thomas have already drawn attention. The home surroundings of such children should be specially investigated under the headings of elevation, overcrowding, dampness of house or site, amount of sunlight. It has been pretty well established that low-lying sites near rivers are particularly favourable to the incidence of this condition. Where possible, children who show tendencies to rheumatic affections should be removed to more favourable surroundings. I am quite aware that such a scheme would meet with a good deal of opposition on the part of parents, who naturally dislike to have their children sent away. This difficulty can only be overcome by the enlightenment of the public as to the danger of permanent invalidism to which these children are exposed.

In this connexion the importance of a publicity campaign with the object of educating the public in the need for a concerted effort to protect our children from the devastating effects of this disease cannot be too strongly urged. Special hospitals for the treatment of children who have had an attack of rheumatic fever should be established all over the country. These institutions would differ from the ordinary hospital in that the patients would be kept for prolonged periods. While undergoing their rest there is no reason why their education should suffer, so that these institutions would really be "school hospitals." Until a specific remedy for acute rheumatism is discovered, the best we can do is to place the sufferers under the most perfect hygienic surroundings we can devise. In the Hartfield Hospital, which is run on more or less "open air" lines, in Sussex, it is found that even under the worst climatic conditions the children improve rapidly and very few after admission develop fever and rheumatic pains.

Non-Articular Rheumatism.

This term includes muscular rheumatism, sometimes called chronic rheumatism or myalgia, fibrositis, pleurodynia, and torticollis. The Ministry place myalgia of the erector spinæ muscles (lumbago) in a class by itself as being an easily distinguishable clinical entity. The remaining subclass comprises sciatica and brachial neuritis. Now, when we speak of muscular rheumatism we are really referring to an affection of the white fibrous tissue which forms an envelope that sends its prolongations everywhere throughout the body and supplies the muscle sheaths and coverings for the tendons and aponeuroses. It acts as a supporting tissue for the blood, lymph, and nerve-supply of the body generally. It must of necessity, therefore, be intimately concerned with all the biological interchange of fluids which are continually taking place as a result of bodily activity.

Ætiology.—There are several theories as to the causation of these painful affections, but it can be shown that they largely depend on the retention in the plasma of the waste products of metabolism which interfere with the efficient removal of the products of muscular activity. Intestinal toxæmia is a fruitful source and easily explicable. Cold, especially when prolonged, is another very common cause. The incidence of a stiff neck or an attack of lumbago consequent on sitting in a draught, possibly in wet clothes, is a usual experience; heat is necessary for efficient muscular action, and the chilling of large surfaces of the skin along with its contained blood must interfere with its excretory functions. With regard to the bacteriological side of the question, it would be futile to deny that in many instances the removal of some infective foci in cases of fibrositis or muscular rheumatism has been followed by rapid improvement or a complete cure of the condition.

Prevention should obviously comprise such measures as the avoidance of prolonged surface chilling to the body—the adequate warming of work-rooms, the provision of facilities for drying clothing. Attention should be paid to housing conditions, such as dampness, low-lying situations, and the like. As the condition is, so far as I envisage it, dependent in a great measure to metabolic irregularities, due attention should be paid to the diet. A diet excessive in starch is very apt to cause intestinal fermentation, and it has been observed that patients suffering from both this condition and one which affects the joints in a manner to be described later, show a diminished sugar tolerance.

With regard to the *arrest* of the condition, the treatment is both general and local. Dietetic errors should be corrected. Where possible a course of treatment at a selected spa is, in the majority of instances, of the greatest benefit. The daily intestinal flush combined with local measure stimulates metabolism and quickly promotes a cure. Heat and massage are the most important local measures we have at our disposal for the treatment of muscular rheumatism or fibrositis. There are two objects to be kept in view, one to promote a freer lymph circulation and the other to break up the nodules. When possible a radiant heat bath should be given as a prelude to the massage. If such a bath is not available the old-fashioned hot flat-iron over a few layers of flannel is almost if not quite as effective. To promote free circulation the muscles should be kneaded with the palm of the hand the thumb being kept behind. This method is very well adapted for the neck muscles and for those in the spine and lumbar region. For the nodules, each individual one that can be felt should be treated in turn. The ball of the thumb, previously anointed with a little vaseline, should be employed. The movement should be a combination of pressing and rolling against the underlying bone if possible. Under such pressure the nodules will be felt gradually to soften and disappear. Older ones naturally take longer.

Rheumatoid Arthritis—Two Types.

Rheumatoid Arthritis, Osteo-Arthritis, Gout, and Unclassified Joint Conditions.—It is in connexion with the group of joint affections that difficulties in description chiefly arise. The task is not made any easier by the numerous attempts at classification that each observer feels himself called upon to make. Some classifications have an anatomical basis, others are based on supposed ætiological conditions, while others again are founded on a combination of the two, which only makes confusion more confounded.

Rheumatoid arthritis is an unfortunate name for the condition to which it is applied, because it lacks distinctiveness. It moreover labours under the disadvantage of being applied to what in my opinion are two distinct and separate diseases. Anatomically speaking, they have this in common—i.e., that in the early stages of the condition the changes are mainly confined to the structures round the joints, and the name "infective periarthritis" has been suggested in consequence.

The first type of rheumatoid arthritis or infective periarthritis is characterised as follows: It may be seen in an adult male or female of any age. It may commence suddenly in a large joint such as the knee or wrist, or in a smaller such as the metacarpo-phalangeal of the middle or index-finger, which become swollen and inflamed and later on become spindle shaped. There may be considerable constitutional disturbance at the onset of the condition, and it is sometimes difficult to say whether such a case at first is or is not one of subacute rheumatism or subacute rheumatic fever. The subsequent progress of the case will clear up the diagnosis, as in that the joint affections of subacute rheumatic fever rarely if ever tend to become chronic and progressive. On the other hand, in this variety of rheumatoid arthritis much permanent damage may be done. It leaves in its train wasting of muscles, ankylosis of joints, frequently with much distortion. This is the class of case, perhaps above all others, which eventually becomes a burden to the State or dependent on his friends or on charity.

With regard to the *causation* of this condition, the presence of a local focus of infection—the teeth, tonsils, or an inflamed gall-bladder or appendix—should be considered. Another contributory cause which has not received the attention it deserves is that of derangements in the circulation of the skin and periphery generally. It would appear that the importance of the skin as an organ of defence against disease is even now not fully realised. The prolonged application of cold, therefore, to the surface of the body must of necessity have a powerful effect on the functions of the skin as an excretory organ, in that toxic by-products are retained in the circulation and are thus liable to deposition in the joints, or rather round the joints. This is probably the explanation of the influence of climatic conditions on the incidence of this form of rheumatic disease. This particular type is specially prevalent in cold and humid climates. Humidity of the atmosphere alone is not sufficient. It is not nearly so prevalent in districts with a heavy rainfall and a relatively high mean temperature as in localities with a smaller rainfall but a lower mean temperature. The same explanation will apply equally well to conditions of industrial employment where the workers are exposed to a damp, cold atmosphere. It will also account for its heavy incidence in districts with a damp clay subsoil and in houses with an inefficient damp course.

Prevention.—The general lines on which preventive measures should proceed would obviously include the removal of "hearths" of infection, the avoidance as far as possible of prolonged surface chilling, adequate provision for the drying of clothes in factories, the maintenance of an equable temperature in work-rooms. Dietetic conditions deserve more than a passing mention. There is a firmly fixed idea among the lay public that red meat is unsuitable for rheumatic cases, with the consequence that arthritics are apt to overdo the carbohydrate side of their dietary. In view of the fact that most of these people have a lowered sugar tolerance, the diet should consist as far as possible of red meat, fish, fats, green vegetables, and fruit. The vitamin-content of the food is of considerable importance. In this connexion vitamin B is essential in aiding the efficient action of the intestines. A dietary deficient in this particular vitamin is apt to induce flatulent distension and stasis, two conditions specially favourable to the formation of toxins which may eventually find their way to the joints. Among the industrial population the consumption of tinned and bottled foods is much greater that there is any necessity for. If the advantages of freshly prepared wholesome food could be brought home to many people who attempt to subsist on canned meat and vegetables, it would, to say the least of it, be all to the good.

The *treatment* or arrest of this condition, after the search for and removal of any discoverable "hearth," must be largely hydrological. Mineral waters are of great value from their flushing action, whereby intestinal toxins are swept from the system. The aim of bath treatment is to produce in the first instance an active hyperæmia. This may be induced by hot air, steam, or immersion mineral-water baths, such as brine, peat, sulphur, mud, or fango. Manipulative baths, either under water or under a douche directed on the part, are also extensively employed with the greatest success.

The other condition to which the name rheumatoid arthritis is applied occurs mainly in young women and is, perhaps, never seen in the male. We have, therefore, at the outset a distinction which should entirely separate it from the affection we have just described. Cases of this type amount to one-sixth of all those of infective periarthritis. The French regard this disease as a tuberculous manifestation, and other observers ascribe a neurotrophic origin for it. It has a special prevalence among young women who follow an indoor occupation, dressmakers, school teachers, and the like. It commences slowly and insidiously, attacking the smaller joints of the fingers, the metacarpo-phalangeal, or the mid-phalangeal joints. It is symmetrical and centripetal, involving the wrists and ankles after the toes and fingers. The temporo-maxillary joint is frequently affected. There may be associated nervous conditions such as sweating, glazing of the skin, with atrophy of muscle and bone. The removal of a supposed focal infection does not appear to arrest the disease. Sufferers from this condition show all the signs of a profound metabolic upset. They are pale and anæmic, their circulation is feeble, and trophic changes are common. It is a progressive disease. Ankylosis does not always occur, but subluxation and distortion of the finger-joints are extremely common, and the patients are very neurotic.

Every possible measure that can be devised in the way of building up the constitution and increasing the resistance of the patient must be tried. A course of arsenical waters have repeatedly been found to be of great benefit. The patients must be removed from unhygienic surroundings and placed where they will get plenty of fresh air and sunshine. Treatment by the ultra-violet rays has shown encouraging results, but it is perhaps early to speak very definitely on this point.

Osteo-Arthritis.

This condition has not the same climatological and geographical limitations as the others.

Evidences of osteo-arthritis are found in the skeletons of man and even in prehistoric animals all over the world, and are especially well seen among the bones of ancient Egyptians in various museums. Timbrell Fisher points out that in osteo-arthritis we are faced with a borderland between a frankly inflammatory condition and a neoplasm of the joint structure. He further shows that a striking feature which distinguishes the disease from the more acute and probable infective group of conditions known as rheumatoid arthritis is the almost invariable absence of small cell infiltration.

Osteo-arthritis is gradual in its onset, and is more prevalent in the later decades of life. It is as often as not monarticular and one of the larger joints is usually affected, the hip, knee, or shoulder probably most frequently. Although it usually becomes more or less concentrated in one joint, X ray photographs will often demonstrate an earlier condition in some of the other joints. This condition is very frequently associated with arterio-sclerosis and high blood pressure. The sufferers are usually well-nourished and present quite a different appearance to those suffering from infective periarthritis. One can often form a shrewd idea as to the condition by the first look at the patient before proceeding to the examination of the joints.

Ætiology.—Opinions differ as to the precise ætiology of this disease. There are those who say it is due to a low form of septic infection occurring in the intestinal tract or bladder. Personally, I am not inclined to this view. I have seen a certain amount of improvement follow the removal ot an obvious septic focus, but I do not think such focus was a direct cause of the condition. In a great number of cases a history of a strain or injury to the joint, often years previously, can be obtained. The injury in the first place lowers the resistance in the joint and toxins, probably metabolic in origin, find their way to the site of lowered resistance, with the result that the familiar train of symptoms ensues.

Prevention.—The avoidance of metabolic errors, even though a counsel of perfection, would seem to be one of the chief points with regard to the prevention of the condition.

Treatment.—These cases derive great benefit from spa treatment. This is proved by the fact that they return again and again to the spa of their choice. The internal administration of the various aperient waters, saline and sulphur, reduces weight, lowers blood pressure, and corrects faulty metabolism. The local treatment that they undergo improves the condition of the skin and aids in the elimination of toxins. Manipulative douches improve the condition of the muscles round the joints. It is perhaps here that we should utter a word of caution as to the manipulative treatment of the stiff joints. Too vigorous movements and attempts to move fixed joints may do more harm than good. The masseur should confine his attention to the structures round the joint and leave the joint itself alone. Where there is much pain, local applications of steam, hot water, and peat are most comforting.

Acute and chronic gout are included in the Ministry's list of rheumatic disease owing to the difficulty in distinguishing some forms of chronic gout from osteo-arthritis.

Villous arthritis consists, as its name implies, of a chronic villous thickening of the synovial membranes of the larger joints. The knee is perhaps the one most commonly affected. It may be found in the hip and shoulder. It is very common in women about the time of the menopause, and is easily discoverable by palpating the moving joint when a curious soft crepitus will be heard or felt. The thickened synovial membrane can be distinctly felt bulging out from the joint. It is often associated with incipient flat-foot, which in its turn may have been induced by the increase in body-weight.

The treatment is: (1) General: reducing the obesity by suitable mineral waters and attention to the general health. (2) Local: attending to any deformity of the feet by ordering suitable shoes or instep supports. Steam baths, massage, douche, or local douches with manipulation are useful. These are the cases that the cautious exhibition of thyroid extract benefit so markedly. They mostly show slight evidences of hypothyroidism.

Conclusion.

With the exception of the group comprising acute and subacute rheumatism, the employment of baths and water of various kinds occupy a large place in treatment. The majority of these baths are only obtainable at the spas. Those sufferers from rheumatic disease who can afford a three weeks' stay at one or other spa find no difficulty in obtaining them. Insured persons to the number of 370,000 seek advice every year for one or other form of rheumatic disease. The spa hospitals at Bath, Buxton, and Harrogate can only accommodate all told 5000 each year. Not by any means all the patients who seek advice need spa treatment, but a good many more need it than get it; it is obvious, therefore, that increased accommodation is urgently needed at the spas. There is also the urgent need for the provision in London and the larger centres of population of baths and other remedial measures. Many baths and douches of the highest therapeutic value can quite well be given with an ordinary water-supply. Mud or peat can be procured and used as packs. Vapour and hot air baths are quite easy on installation. These proposed remedial institutions should work in liaison with the spas, and would be the "clearing stations" to select cases suitable for spa treatment. A great many cases are sent to spas that are utterly past praying for. It is in the early stages of the malady that physical treatment is most valuable. Lastly, these central institutions would be the headquarters of research. A vast amount of research work is waiting to be done, and up to the present the fringe has hardly been touched. Well-equipped laboratories are already installed at Bath, Buxton, and Harrogate. London and the larger towns are lamentably deficient in such facilities. The expenditure of capital in the provision of facilities for combined research and treatment would well repay the outlay, for the two million pounds at present paid out annually in "benefits" is only a subsistence allowance. Not one penny of it can be regarded as being spent in treatment. There can be no doubt that once the sad situation of this multitude of sufferers from rheumatic diseases was fully realised, means would be quickly forthcoming to relieve their necessities.

PUBLIC HEALTH IN THE UNITED PROVINCES OF AGRA AND OUDH.

THE population of these provinces, according to the 1921 census, was 45,375,787, being less than that of the 1911 census (46,805,913) owing to territorial changes. The vital statistics have been calculated on the 1921 figures, but "the estimated population, worked out up to the half-year ending June, 1923, shows a further increase of 353,737 over the 1911 census figure."

Vital Statistics.

The recorded birth-rate for the Province in 1923 was 36·04 per 1000, as compared with 32·17 in 1922 and 34·88 for the preceding quinquennium. There was marked variation in the different districts, the ratios ranging from 25·47 in Rae Bareli (Lucknow division) and 25·76 in Gonda (Fyzabad division) to 47·27 in Pilibhit, 47·61 in Moradabad, and 49·24 in Bijnor (all in Rohilkhand division). The death-rate was 23·37, as compared with 25·01 in the preceding year, and 45·17 in the quinquennium, the ratios varying from 12·78 in Gonda district (Fyzabad division) and 14·12 in Rae Bareli (Lucknow), to 35·37 in Jhansi and 38·59 in Hamizpur (both in Jhansi division). It is stated (p. 3) that 13,106 births were returned in "notified areas," also that 9793 deaths occurred in these "areas"; but it is not explained what constitutes a notified area, or in what way they differ from the official "districts." The infantile mortality for the Province was 169·37 per 1000 births, a further reduction on 183·8 in 1922, 236·5 in 1921, and 232·3, the decennial average (1911–20); in the urban areas the ratio was 263·91, and in the rural tracts 160·77, as compared with 254·83 and 177·33 in the preceding year. The general mortality in the rural tracts was 22·48, and in urban areas 35·86, as compared with 24·45 and 32·93 in 1922, and 44·86 and 49·07 respectively for the preceding quinquennium.

Epidemic Disease.

Cholera caused 2591 deaths, giving a ratio of 0·06 per 1000, as compared with 0·05 in 1922 and 1·56 for the quinquennium; only five deaths from this cause were registered in the four districts composing Jhansi division (including towns and rural areas), with a total population of 2,065,297, too small a number to yield a ratio of 0·01 per 1000; the highest mortality ratios occurred in Ballia district of Benares division (0·62 per 1000); Naini Tal (0·43), and Aligarh (0·32). For the Provinces as a whole the cholera mortality in rural areas was 0·05, and for the towns 0·17 per 1000; in the former the highest ratios were 0·56 per 1000 in Ballia and 0·45 in Naini Tal; and for the latter 5·40 in Firozabad (Agra district) and 3·40 in Ballia. There was a considerable increase in the small-pox mortality, 747 deaths, as compared with 242 in the previous year (stated as 0·02 per 1000 and 0·01 respectively), but still much below the quinquennial average (0·09); seven districts were entirely free from the disease. In the towns the death-rate was 0·16, and in the rural tracts 0·01; Allahabad district suffered most, with 228 deaths (0·16 per 1000), 174 occurring in children under 10 years of age. Plague also showed a considerable increase, 74,187 deaths, giving a mortality of 1·63 per 1000, against 0·51 in the preceding year, and 1·13 for the quinquennium. Kumaon division (Naini Tal, Almora and Garhwal districts) was entirely free, also ten other districts in various parts of the Province; in Azamgarh district of Gorakhpur division there were 21,227 plague deaths (13·89 per 1000), of which 20,720 occurred in the four months, January to April inclusive. "The attitude of the people towards inoculation was on the whole satisfactory. They realised its value as a preventive measure, but did not volunteer until the disease was actually raging in their villages." The total inoculations numbered 62,615; particulars are furnished as to 5412 persons inoculated, compared with 105,824 not so treated in several districts of the Province; of the latter number 1497 died in the selected areas examined; while of the 5412 inoculated only 4 died. Evacuation was carried out in most districts on the appearance of the disease without any opposition.

Dispensaries and District Boards.

Unfortunately the travelling dispensaries have been reduced from 112 to 45, apparently for financial reasons. Six district boards, Almora, Bulandshahr, Kheri, Gonda, Bahraich, and Gorakhpur have, however, resolved to support them by contributing Rs.1000 per dispensary, the rest of the cost being provided by the Government. During the period under report 1,411,775 patients were treated, and 23,309 operations were performed at these dispensaries throughout the Province. "It is hoped that the experience of one year without them will induce the boards to reconstitute them next year." The district health scheme experimentally introduced in the districts of Gorakhpur and Basti in 1922 was extended to Azamgarh in 1923; instruction was given and hygiene propaganda carried on by lantern demonstrations, lectures to teachers, and articles in the local papers, with good results; owing to financial stringency the extension has been retarded, but it is hoped that it will be resumed as funds permit. "As many as ten municipal boards have not yet appointed medical officers of health on the ground of paucity of funds. It is essential to the welfare of the whole community that towns as large as these should have a properly organised health service. In other civilised countries local bodies of this size, and even of much smaller size are bound by law to employ M.O.H. and sanitary inspectors in adequate numbers." It is time for the United Provinces "to fall into line with other countries in this respect." Moreover, preventive medicine pays, as has been proved over and over again.

PRIMITIVE MORALS.

Mr. B. Malinowski, D.Sc., reader in social anthropology at the University of London, in an address on the Contributions of Anthropology to Social Hygiene, delivered recently at King's College, London, under the auspices of the British Social Hygiene Council, reopened some of the most debatable questions of primitive sexual sociology. On the whole supporting the views of Darwin and Westermarck that monogamous marriage and family existed from the beginning of humanity, the lecturer pointed out that while problems of origins and development were of a merely antiquarian interest, the study of cultural function and aim was of practical importance.

Dr. Malinowski proceeded to show by an extensive examination of anthropological evidence, as well as drawing upon his own researches among Melanesian and Papuan tribes, that propagation, training of the young, as well as the satisfaction of full sexual love, were always fulfilled within the family and the individual marriage. Licence occurred in a number of savage tribes, though by no means in all. It was found either in the form of prenuptial freedom, when it played an important part in effecting the selection of a proper mate by the method of trial and error. It acted also as a safety-valve by which the unruly passions of youth are allowed to find a natural vent. Marriage and the family were never really obliterated or overridden by it. Dr. Malinowski analysed from the same point of view the occasional outbreaks of customary licence in orgiastic feasts, in magical or religious ceremonies, in seasonal relaxations of sexual restraint, explaining their occurrence by their cultural utility at a low level of development. Anthropology would advocate early marriages, equal rights for man and woman, a wise reconsideration of the divorce laws, and an equal moral measure for both sexes. Prostitution, with its concomitants of crime, degradation, disease, and disgenics appeared to the anthropologist as the greatest evil of modern culture. Prostitution placed us morally below the savage. The real problem was how to combine a full life for man and woman with a high moral standard. Good family life and a happy marriage could not be divorced from one another. They could not be achieved by a mere propaganda of continence, but rather by the ideal of an intimate association between the satisfaction of instinct on the one hand and the full expression of love and affection on the other. Physical intimacy without spiritual passion was degrading, while mere mortification of the flesh was in most human beings unnecessary.

EFFICIENCY OF MERCURY-VAPOUR LAMPS.

WE have received from Dr. Frederick W. Alexander, medical officer of health for the Borough of Poplar, a special report issued by him on methods of gauging the intensity of ultra-violet rays from artificial sunlight lamps. The booklet is entitled Practical Artificial Light Treatment, and may be obtained from the Public Health Offices, Bow-road, E. 3. Dr. Alexander says that as the ultra-violet radiations from quartz mercury-vapour lamps begin to fall off from the first day they are brought into use, it is most desirable to have a simple means of measuring their efficiency. Brilliancy is not a reliable guide. After referring to the erythema-dosimeter and the acetone methylene-blue gauge and the views of Dr. A. Eidinow and Dr. Leonard Hill (THE LANCET, 1925, ii., 317), he describes a simple apparatus for daily use which depends on the production of fluorescence on a uranium screen by ultra-violet rays which have passed through a Chance filter. He also records results of exposing photographic printing-paper to the rays of a standard lamp when different filtering media are employed. The results obtained with a lamp to be tested may be compared with the standard.

Messrs. Bengue and Co., manufacturing chemists, have changed their address to 24, Fitzroy-street, London, W. 1.

Mr. F. C. Goodenough, chairman of Barclay's Bank, last week unveiled a brass tablet over the bed in the Burdett Ward of Westminster Hospital, which has been endowed with the proceeds of a concert given last April at the Albert Hall by the male voice choir of the bank.

An Address
ON THE
MANAGEMENT OF HEAD INJURIES.

Delivered before the Warwick and Leamington Medical Society on Oct. 31st, 1925,

BY WILFRED TROTTER, M.S. LOND., F.R.C.S. ENG.,
SURGEON, UNIVERSITY COLLEGE HOSPITAL.

WHEN one deals with any part of the surgery of head injuries it is natural to approach the subject by the way of theory. This is because there is no department in which what we know of practice is more closely and clearly related to what we know of principle, and where the management of actual cases proceeds more directly from pathological understanding. Little as we may and do know of the ultimate physiology of the brain, in so far as the relatively simple processes set going by mechanical injury are concerned, we can already say in general terms and with some precision how injuries are produced, what injuries are likely to occur, and what effects on function they cause; we can see in the majority of cases the meaning of symptoms as they arise; and we can direct such treatment as is possible by reason instead of having to depend on clinical intuition to the extent that is necessary elsewhere. It would, therefore, be wholly logical to begin what I have to say by a general statement of theory from which the necessary practical applications could easily be made. It must be admitted, however, that the theoretical route is a roundabout one, and one which would take us over ground that nowadays, and especially on this occasion, may be assumed to be in great part, if not wholly, familiar to us all. I propose, therefore, to take for granted as common knowledge the established facts concerning the special features of the cerebral circulation, the relation of circulatory disturbance to symptom production, the mere mechanics of cranial and cerebral injury, and the general body of fundamentals established by experiment and inference from it. We shall thus be able to direct our attention especially to matters of treatment and to deal with them in a severely practical way.

THE RELATION OF CEREBRAL SYMPTOMS TO CEREBRAL LESIONS.

It is a very old custom to describe the lesions that may be met with in cases of head injury as (*a*) intracranial hæmorrhage, (*b*) cerebral laceration, and (*c*) cerebral contusion. In clinical work the attempt to distinguish between the last two is of little or no value, and the clinician need concern himself only with the two broadly distinguishable types of hæmorrhage on the one hand, and lesions of the contusion-laceration type on the other. Now it is well known that the brain is peculiar in showing more clearly than most other organs a gradation of symptoms according to the *intensity* of the lesion that causes them. This series of symptoms of graduated severity has long been roughly divided into two classes, the more severe being called "paralytic," the less severe "irritative." The term irritative as applied to the symptoms called forth by the less intense lesions is, for reasons we need not now discuss, unsatisfactory in theory and misleading in practice; it might very well be replaced by the term "sub-paralytic," which has the advantage of being without fallacious pathological implications. Symptoms of paralytic type correspond with maximal interference with the circulation in the affected part, that is anæmia, while symptoms of sub-paralytic type correspond with a less intense circulatory disturbance, that is venous congestion or stasis. In traumatic cases the abnormal pressure on a given part of the brain, necessary to produce anæmia in it, can in general be produced only by grossly extravasated blood; on the other hand, the pressure on a given region necessary to produce venous congestion can be readily produced by the swelling of contusion. Thus we have two pathologico-clinical sequences fundamental in dealing with head injuries—namely, hæmorrhage, anæmia, paralytic symptoms; and laceration-contusion, venous congestion, sub-paralytic symptoms.

For the uses of practice, then, we must learn to regard paralytic symptoms as conclusive evidence of hæmorrhage; such symptoms will tell us, moreover, not only of the presence of hæmorrhage but also of its situation. It must be admitted, however, that definite local hæmorrhage is a comparatively rare event even among the graver cases of head injury. It is obvious, in fact, that the essential damage always tends to be in the nature of contusion-laceration, while hæmorrhage is an occasional complication due to the incidental tearing of a vessel. Thus, even in a case where hæmorrhage can be recognised and dealt with, the surgeon must always recognise that behind the condition he has been fortunate enough to be able to treat, there probably exists more or less severe and widespread laceration-contusion which may yet deprive him of ultimate success. When we speak of the paralytic symptom as characteristic of hæmorrhage we must bear in mind, of course, that all hæmorrhages produce also sub-paralytic symptoms even more constantly and on a wider scale than paralytic symptoms; the latter owe their extreme importance in diagnosis, then, to being the sure index of a pressure on the affected part of the brain greater than can be produced by the swelling of a mere contusion. Conditions of the contusion-laceration type make up the great body of head injuries as we meet them in practice, and, in consequence, the symptoms we most commonly observe are of the corresponding sub-paralytic kind. Among such symptoms may be irritability, restlessness, delirium, drowsiness, headache, giddiness, vomiting, rigidity, twitching, convulsions, alterations of reflexes, temperature, pulse, and respiration. In occasional cases there will be superadded to the symptoms of this group one or more of the true paralytic variety, indicating that the corresponding region is more profoundly affected and is the seat of hæmorrhage. Among such symptoms may be coma, monoplegia, hemiplegia, aphasia, hemianopia, dilated fixed pupil, loss of superficial abdominal reflex, extensor plantar reflex.

THERAPEUTIC GROUPING OF CASES.

It is plainly impossible to make any complete and logical clinical classification of the almost infinitely various material offered by head injuries. Nevertheless there is possible a certain rough grouping, according to the necessities of treatment, which is useful in description and of some practical value if its distinctions are not too rigidly enforced. We may recognise then the following main therapeutic groups: (*a*) Intracranial hæmorrhage, usually, of course, superimposed on more or less contusion-laceration. This group, relatively small in numbers, owes its great importance to the lesion being usually progressive, and, as such, necessarily fatal unless surgical treatment is applied. Exact diagnosis and adequately prompt operation are therefore urgently called for. (*b*) Cases of severe contusion-laceration without recognisable hæmorrhage. These make up the great bulk of clinical material met with in civil practice. As they display no focal symptoms, these cases are often regarded as not calling for operative treatment. Many are rapidly fatal; in those where recovery occurs there is often a long illness, a longer convalescence, and a residue of disabling sequels. The group is important because of its size, the frequency of incomplete recovery, and because operative treatment in judiciously chosen cases is of value. (*c*) Cases of mild contusion-laceration. These owe their importance to the frequency with which they still pass unrecognised because of the absence of grave initial symptoms, to the disabling nature of the symptoms that develop, and to the fact that treatment (often without operation) is effective. (*d*) Local brain injury with external wound, including gunshot wounds and all kinds of punctured or depressed compound fractures of the skull. This class is included merely that we may recognise its importance in passing. The kind of treatment needed in these cases is now so generally understood that discussion of it is superfluous. It is now necessary to deal in some detail with the first three groups defined above.

INTRACRANIAL HÆMORRHAGE.

The classical picture of an intracranial hæmorrhage over one cerebral hemisphere is familiar to us all. There has been a severe accident, concussion, a more or less complete return to consciousness, then drowsiness deepening to coma, hemiplegic signs, a dilated fixed pupil on the side of the hæmorrhage, slow full pulse, slow stertorous respiration, and a rising blood pressure. It is still perhaps necessary to point out that this picture, often regarded as characteristic of hæmorrhage, is that of a far advanced, indeed, nearly terminal, stage. The state of the pupil indicates that pressure enough to cause paralysis has already reached the mid-brain; the pulse and respiration show that sub-paralytic changes have actually reached the medulla. It should, of course, be our object to make the diagnosis in cases of this class long before so advanced and dangerous a state is reached. As has already been pointed out, the appearance of one definite unilateral paralytic symptom should be enough to indicate the presence and approximate site of the hæmorrhage.

Aberrant Types.—While traumatic intracranial hæmorrhage is usually a rapidly progressive condition becoming manifest within a few hours of the accident, and proving fatal if untreated within a few days, much milder forms, both as to intensity and duration, are occasionally met with. In some of these the condition is scarcely to be distinguished pathologically and clinically from a superficial contusion. A comparatively common type is that in which after a week or ten days of rather generalised "irritative" symptoms the development of Jacksonian fits points to a focal lesion of the Rolandic area. Another well-defined type is the *chronic subdural hæmorrhage*, in which, after an accident (often apparently trivial), there is a prodromal period of many weeks with minor symptoms (headache, slight mental changes) followed by the onset of coma. This coma is apt to show remarkable and characteristic intermissions, and the alternating mental states may merge into one resembling advanced dementia. The lesion found is known as "pachymeningitis hæmorrhagica interna," and is an encysted traumatic hæmorrhage. I shall not attempt to remind you of the very familiar details of an operation for intracranial hæmorrhage, but shall venture to make a few remarks on two matters rather of principle than technique.

Multiple Hæmorrhages.—As a rule an intracranial hæmorrhage is single. Exceptions are, however, not very rare; extradural and intradural hæmorrhage may occur on the same side, and bilateral hæmorrhages are not uncommon. If therefore after the evacuation of an extradural hæmatoma the dura is found to be very tense, it should always be incised forthwith as a precaution. Again, if after the apparently successful evacuation of a hæmorrhage on one side symptoms of abnormal intracranial tension persist unduly, the possibility of a hæmorrhage on the other side must very seriously be considered. In the case of chronic subdural hæmorrhage the lesion is far from uncommon on both sides. These cases are of especial importance, since if both hæmorrhages are not evacuated at the same operation the patient is very unlikely to survive.

The Urgency of Operations.—In dealing with head injuries it is of great value to cultivate a sense of the urgency of any necessary operation that shall be both adequate and reasonable. While guarding against the terrible mistake of undue delay we must be on our guard against being led into untimely action by an atmosphere of false emergency. Rapidly extending lesions, capable of producing widespread paralytic symptoms within a few hours, are invariably fatal and not to be helped by surgery; cases capable of recovery have a margin of safety of more than a few hours, and should have the benefit of a careful diagnosis and deliberately designed operation. It may, indeed, even be doubted whether many lives have been saved by operations much within 24 hours of the accident. In grave cases of head injury there is almost always some contusion of the medulla and pons; it seriously increases the danger of the condition, and the knowledge of its probable presence is a strong reason against any but quite indispensable operations.

SEVERE CONTUSION-LACERATION WITHOUT OBVIOUS HÆMORRHAGE.

As we have already said, this is perhaps the commonest clinical picture presented by cases of severe head injury. From the reaction stage of concussion the patient passes into the condition more or less covered by the old clinical term "cerebral irritation." Some affection of consciousness is the most constant feature. The patient is usually drowsy and inert, but hypersensitive and irritable to stimulation by day and restless or even delirious by night. Sometimes the inertia is replaced by delirium and maniacal excitement that may last for weeks. The reflexes may become generally brisk after the effects of concussion have passed off; there may be rigidity and twitching of the limbs. The pulse and respiration are apt to indicate bruising of the medulla by being persistently slow, and there may be periodic phenomena of an incomplete type. Consciousness is scarcely ever actually lost, and the patient can usually be roused to give quite complicated responses, though after recovery there is little or no memory of this period.

A considerable number of patients succumb, usually to increasing bulbar involvement and a terminal pneumonia. Many recover slowly even after weeks of partial unconsciousness. The patients who recover spontaneously are particularly likely to show slight mental changes, epilepsy, or—most commonly of all—persistent severe headaches. The condition here is an extensive contusion of the brain with secondary œdema. Since the brain is rigidly encapsuled by the skull the state of affairs is different in two important respects from that which obtains in any other organ similarly bruised—(*a*) free swelling is not possible, and thus the extravasated blood of the contused tissues and the œdema exercise a certain pressure on the vessels and embarrass the venous return, hence follow venous congestion and sub-paralytic symptoms; (*b*) since the circulation is persistently embarrassed the absorption of extravasated material is very greatly delayed and is apt to be incomplete even for years; the persistent headache which is an evidence of abnormally high intracranial tension is proof of this.

Treatment.

Although many patients ultimately recover, many are seriously ill for long periods, and a large number suffer from disabling sequelæ. Since the inability of the brain to undergo adequate compensatory swelling is the cause of the symptoms, the rational treatment is obviously to do a decompressive operation in order to allow room for such swelling to occur. Experience confirms this view, and the only points of any difficulty are the determination of the cases in which no satisfactory spontaneous recovery can be expected, and the choice of the best time to intervene. Surgical treatment should be advised when at the end of the first week serious mental changes are present (profound drowsiness and inertia, delirium, or mania) and seem to be fairly stationary. In a few very serious cases operation may be called for at an earlier date, but generally the choice of a time is not a matter of great urgency, though of course once it has been decided that intervention is necessary there is no object in delay.

The operation to be done is the making of a fair-sized decompressive opening low down in the right temporal fossa. It is sometimes necessary to make a bilateral opening in order to give adequate relief; in such cases there are probably hæmorrhages that have escaped diagnosis.

MILD CONTUSION-LACERATION.

We now come to what is in some ways the most important part of our subject. The grosser and graver kinds of head injury have long attracted the attention and interest of surgeons; those which we are now about to consider have been comparatively little noticed and until recently not very thoroughly understood. Nevertheless they are met with commonly in practice and are the cause of persistent and distressing symptoms. I refer to the slight or moderate grades of cerebral contusion that are often left by accidents which seem at the time to have produced no serious effect. The symptoms corresponding with such relatively minor cerebral injuries often appear clinically in the form of sequelæ to an accident that had been regarded as unimportant. They rarely have any focal characters, but are manifestations of a disturbed intracranial tension; thus it comes about that their cardinal feature is headache, though this may be accompanied by other less conspicuous elements such as giddiness, slight changes of disposition, and minor mental and physical disabilities. So clear, however, is the primacy of headache among the clinical phenomena that one refers habitually to the cases under the term "contusion headache."

Contusion Headache.—The condition usually declares itself within a few weeks of the accident; if the patient has been laid up the onset of headache often follows the resumption of active life; sometimes, and especially if there has been no period of rest, headache comes on from the first and increases in severity. In well-marked cases the headache occurs in attacks often many hours in duration. The attacks are brought on by excitement, undue exertion of mind or body, and fatigue. Between attacks the patient may feel perfectly well and be capable of leading an active life. Quite commonly, however, in the intervals there is some evidence that the intracranial tension is disturbed; abrupt raising of the venous pressure, as by coughing, straining, or stooping, may cause a transient discomfort, swimminess, or even pain in the head. The headache may be of extreme severity, and is of a throbbing, bursting character. It makes the patient intolerant of movement, effort, or interference, and he is apt to become irritable and sometimes even dangerously enraged if he is not left to himself. The headache is usually relieved by rest in bed in quiet and darkness, and the attack often ends if the patient can get prolonged sleep.

Such symptoms are met with in all grades of severity. The most characteristic features are the throbbing quality of the headache, its paroxysmal character, and the tendency of the attacks to follow some cause recognised by the patient. Contusion headache of greater or less severity is very common, and as it is an extremely distressing and disabling complaint the diagnosis is of great importance. I do not propose to discuss the problem of diagnosis in detail, but shall limit myself to certain general and perhaps rather dogmatically phrased statements. The majority of cases are well marked and unmistakable, a few cases are very difficult, and will cause doubts as to a neurosis or mental disease.

It is a fallacy to suppose that neuroses are particularly common as sequels of head injury, and there can be no doubt that many symptoms have in the past been regarded as neurotic which are, in reality, due to minor injuries of the brain, producing persistent disturbances of intracranial tension. A complete absence of the classical signs of focal cerebral injury is usual in cases of contusion headache, and in no way conflicts with the organic origin of the symptoms.

Treatment.

When the diagnosis is complete, treatment of contusion headache can be undertaken with every reasonable confidence of a satisfactory result. It should be entered upon under the guidance of a very clear conception of the pathological condition that is to be contended with. The brain has been bruised, and by a mechanism that has already been mentioned resolution is rendered difficult and prolonged. Meanwhile the swollen part encroaches upon the strictly limited space available for the brain and its circulatory movements. The result is more or less interference with the venous side of the cerebral circulation, and a tendency for the intracranial tension to be maintained at a slightly raised level. This state of affairs, while it may of itself cause no symptoms so long as the patient is at rest, renders intracranial conditions unduly sensitive to disturbance. If as the result of active exercise there is an increased arterial inflow, the restricted venous outflow at once reveals itself by causing a rapid rise in the intracranial tension. Similarly, if as the result of the patient stooping or straining the venous pressure in the jugulars is raised, this tells back at once on the already restricted venous outflow from the skull and again the pressure rises. It is disturbances on the venous side which are by far the most effective in adding to the already raised intracranial pressure. Only when the arterial circulation is in its most placid state, and the venous outflow at its freest, is it possible in some degree to prevent the intracranial pressure from rising to the point of producing symptoms. Thus it is that rest in bed is the foundation of the treatment of cerebral contusion. It has long been known and insisted on that prolonged rest after head injuries is the best and an indispensable prophylactic against the development of sequelæ. The theory of cerebral contusion confirms this very old clinical doctrine in the strongest possible way.

Even when contusion headache is definitely established, rest in bed is essential to treatment and may in itself be effective. Its purpose is to prevent the attacks and to maintain conditions favourable to resolution of the bruise in the brain. A period of three or four weeks in bed may be necessary in severe cases.

Another important line of treatment by which the abnormal intracranial tension can be influenced acts through the cerebro-spinal fluid. As in other conditions accompanied by œdema of the brain, there is in cases of cerebral contusion a certain accumulation of cerebro-spinal fluid which tends to contribute to the disturbance of the intracranial tension. There are two ways in which this excess can be influenced: (*a*) by lumbar puncture, (*b*) by administering hypertonic saline solutions. Lumbar puncture is most valuable in its place, but, unfortunately, it cannot be repeated without limit. It has its chief value as an emergency measure in severe attacks, but there is no doubt that its effect in giving relief is often more prolonged than might be expected. Hypertonic solutions of magnesium sulphate administered by preference in the form of an enema of 3 oz. of the salt in 6 fl. oz. of normal saline daily, or even twice daily, is said to be capable of producing very obvious relief of intracranial pressure symptoms. Manifestly its use cannot be carried on indefinitely, but it may well be tried for the relief of severe attacks. Another method of exercising a steadily favourable effect on the intracranial condition, and so encouraging resolution of the contused part, is a very simple device which I have found of surprising value in the relief of headache due to moderate increases of intracranial tension. This is to make use of the influence of posture in favouring the venous outflow from the skull. It is sometimes forgotten how considerably the recumbent position raises the pressure in the jugular veins and thus checks the venous current from the brain. This is well shown in a patient with an opening in the skull. In the sitting position—supposing the intracranial pressure to be normal—

the scalp sinks deeply into the cranial opening; lying down the depression is filled up to the level of the surrounding skull because the intracranial pressure closely follows that of the veins and varies strictly with the jugular pressure. It is probably for this reason that so many headaches of intracranial origin—including those of cerebral tumour and even migraine—begin in the morning, so that the patient wakes to the knowledge that he is going to have an attack. It is usually an easy matter to train a patient to sleep propped up in bed, and in my experience the acquiring of this simple accomplishment has frequently been followed by an astonishing diminution in the frequency and severity of headaches.

We have thus a series of relatively simple measures of proved value in dealing with contusion headache. Two I should regard as indispensable and for prolonged use—rest in bed and a rigid enforcement of the propped up position; two should perhaps be chiefly reserved for occasional use and the relief of definite attacks—the administration of hypertonic salines and lumbar puncture.

If thorough treatment by these means for a period of a month or so has proved ineffective, the making of a small decompressive opening low down in the right temporal fossa should be advised. If the contusion headache has followed a local injury of the skull, as was so often seen in the wounds of war, the opening should be made at the injured spot. That typical contusion headaches will be arrested by an adequate decompression is one of the most trustworthy generalisations in surgery.

The largeness of the subject has, of necessity, made our exposition of it both bare and dry, and has prevented the distribution of emphasis on its various parts as one would have wished. In conclusion, therefore, I may perhaps be allowed once more to call attention to the practical value and to the interest to be obtained from following cases of head injury in the light of physiological and pathological principle; to the great frequency and importance of the minor injuries to which the brain is subject; and to the value in them of non-operative and, so to say, physiological methods of treatment.

Cameron Lectures

Delivered at the University of Edinburgh on Oct. 19th, Oct. 20th, and Oct. 22nd, 1925,

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LECTURE III.[*]—INTRACRANIAL TUMOURS AND THE SURGEON.

> "In einem gewissen Gegensatze steht die Operation der Hirnabscesse zu der der Hirngeschwülste. Für die erstere leistet die Diagnose noch zu wenig, die chirurgische Technik aber genug, für die letztere hat umgekehrt die Diagnose schon so viel gegeben, dass Nothnagel z. B. sie für eine verhältnissmässig leichte erklärt, unsere Technik aber, soweit sie sich auf eine ausreichende Umschneidung, Blutstillung und Vermeidung des gefährlichen Hirnödems bezieht, ist durchaus noch im Rückstande. Vielleicht gelingt es, sie zu bessern und zu vervollkommnen."—*Ernst von Bergmann, 1889.*

NEURO-SURGERY: OLD AND NEW.

IT has been said that three stages—optimism, pessimism, and adaptation—must invariably be passed before any revolutionising principles of surgery can become firmly established. After the introduction of surgical anæsthesia, in which Edinburgh had a hand in the person of James Young Simpson, under whose spell Andrew Cameron must have sat, and after the still more important discovery of surgical cleanliness, the outgrowth of Lister's work which Cameron did not live to see, there was a widespread feeling that the chief obstacles to operations on any part of the body had been overcome. This in a measure was true; but when the surgeon came to attack such non-traumatic lesions within the body cavities as the physician was encouraged to surrender to him, difficulties unthought-of were encountered. It was necessary by slow and devious steps to devise a special technique to overcome these difficulties before the stage of pessimism on the part of the profession as a whole could be overcome.

The first successes were in the lower abdomen, and operative gynæcology, in which another Scotsman, Lawson Tait, had no small part, came into being. Since then the surgeon has been slowly working his way from the lower to the upper abdomen where the liver and gall-bladder, the stomach and pylorus, the kidney and spleen, have, in turn, delayed him. Perfected methods and a novel technique had to be devised before he ventured above the diaphragm into the chest for purposes other than to drain suppurating cavities; and he is now, last of all, coming to feel very much at home in the cranial chamber. But this is so recent a happening that many of us have vivid recollections of the wave of discouragement and pessimism which came on the heels of the generally unsuccessful operations for brain tumours undertaken during the last two decades of the century just gone.

There were some neurologists, among them that Nestor of your local profession, Byrom Bramwell, who, insisting even at that time (1888) that intracranial tumours were common, remarked that the soft brain tissue would seem to be "as fine a forcing and feeding ground for new growths as Koch's nutrient jelly is for micrococci and allied organisms"; and it was stated by Bruns, I believe, not long after, that for a physician to assert he had never encountered a brain tumour in his wards or practice was equivalent to an admission that it had passed under his eyes undiagnosed. But these were voices in the wilderness, unheeded; and in the days before the Wassermann reaction every obscure intracranial lesion was regarded as a potential case of cerebral syphilis. This, at least, was the more probable diagnosis, and, at any rate, something might be done for it therapeutically. Better so than to run the risks of a surgical exploration, with its almost inevitable sequence of a broken-down scalp wound, a fungus cerebri, a cerebro-spinal fluid leak and ultimate fatality, should the condition actually be due to tumour. Such was the lamentable outcome of that first historic operation for a clinically localisable tumour, which Hughes Bennett had the courage to advocate, and which, on Nov. 25th, 1884, his colleague, Rickman J. Godlee, performed.

The young neuro-surgeon of the present day, who only gathers from hearsay or from pictures in his text-books what the horrors of a fungus cerebri used to be, can have no conception of the calamities which commonly followed the intracranial operations for tumour as they were done 30 years ago—unless he looks about him in clinics where old-time methods are still practised by general surgeons blind to what has been going on about them in the development of a specialised technique for these complicated procedures.

Among many others in Great Britain who were pioneers in this work we may salute two outstanding figures: Sir William Macewen, whose major contribution was on the subject of the intracranial infections, now the smallest part of our work; and Sir Victor Horsley, whose troubles are for all to read in the contemporary pages of the British medical weeklies. He was outspoken in ascribing them, right or wrong, to the reluctance of his medical colleagues to surrender their tumour cases, except as a last resort, when it was too late for surgery to accomplish much of anything. But even the echoes of a dispute as to how long a patient suspected of tumour should undergo a course of mercurial treatment before the surgeon was called in have long since died away[1]; and looking back on all this from our present standpoint, one hardly knows which of the two parties needed the more sympathy—doubtless a third party, the patient, most of all. . . .

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[*] Lectures I. and II. were published in THE LANCET of Oct. 24th and 31st respectively. They are slightly abridged for issue in our columns, and will be published shortly as a small volume, dedicated to a group of young collaborators.—ED. L.

In the course of a sojourn in the Hallerianum in Berne, spoken of in my first lecture, I had learned many things about states of intracranial pressure which were subsequently of more value to me than the acute tension phenomena which were made the chief subject of my reports. They were things, I am sure, long known to others, though it was new to me: that the sinuses are not rigid, but easily collapsed; that respiratory cessation long precedes cardiac failure; that the falx may be markedly distorted by pressure against one hemisphere; that the brain can be widely dislocated without damage if there are contralateral openings; that pressure is not equally distributed throughout the cranial chamber; that choked disc and exophthalmos can be produced by intracranial tension, and so on.

Some degree of familiarity with these matters proved invaluable in my early intracranial operations, and I cannot too strongly emphasise the desirability of anyone proposing to engage in the field of neurosurgery getting his first experience with operations on the central nervous system in an experimental laboratory, particularly should it be one where the ritual of surgical asepsis is observed. I had the further good fortune at the end of this period to pass some months with Prof. Sherrington at the time when he was re-mapping the motor cortex of the higher anthropoids, and as I was permitted to assist at some of these historic operations I became familiar with his methods of unipolar cortical stimulation, which subsequently stood me in great stead.

Armed with these experiences and with a practical, home-made hæmodynometer—an instrument the model of which I had seen in use during a visit to Riva-Rocci's clinic in Pavia, and which promised to enable one, during the course of a serious intracranial operation, to keep a fairly continuous plotted record—comparable to the kymographic tracings on which I had come to depend; armed, I say, with this small equipment, untutored in clinical neurology, and wholly ignorant of neuro-pathology, I returned to Baltimore and lay in wait for I knew not what. Certainly brain tumours could offer no expectation of livelihood, for up to that time, a dozen years since the opening of the Johns Hopkins, there had been admitted to the surgical service only 12 cases of brain tumour, most of which had been brought to light at autopsy.

A successful brain-tumour operation was a rarity, not the rule; and up to the beginning of the century treatises on the subject were apt to tabulate the 50 odd cases which had so far been reported in the entire literature as having survived an attempted extirpation. However, though the early hopes that these performances might safely rest on the tripod of anæsthesia, antisepsis, and localisation of cerebral function had been dashed, these pioneer operations of the 'eighties and 'nineties, in spite of their discouragingly high mortality, had disclosed an important fact which proved the beginning of a new era.

Matters Technical.—Needless to say, the victims of intracranial tumours ordinarily have headaches, and in course of time get blind; but many had observed that even though a cranial opening might fail to disclose a tumour—as it usually did—and even though paralyses or worse might ensue, the patient's discomforts for a time might not only be greatly alleviated, but, what was more surprising, his choked discs might subside with preservation of vision. These, then, must be purely pressure and not toxic effects of the growth; and Horsley's brilliant mind was quick to grasp and promulgate the idea of a premeditated craniectomy for the purpose of palliating the more distressing symptoms of these common lesions, irrespective of their nature and situation.

These early palliative operations, for which Jaboulay, I believe, introduced the term *trépanation décompressive* (1896), were usually made haphazard in any convenient portion of the skull, until Sänger, of Hamburg, suggested that the bone defects had better be made over the right posterior hemisphere, a relatively unimportant area of the brain from a functional standpoint. But the resulting protrusions covered by scalp alone were often so unnecessarily large and unsightly that other silent areas were sought, particularly ones where an undue herniation might be restrained by a securely closed muscle covering.

So it was that the temporal and suboccipital regions —on the one hand for supratentorial, and on the other for infratentorial lesions—were hit upon as preferential areas for the purposes of decompressions. And though these purely palliative procedures are nowadays less and less often requisitioned, they served a most useful purpose and saved a deal of suffering in their time. What is more, they served so to alter the attitude of the profession towards tumour operations that for a patient to become blind from an intracranial growth without some effort having been made to prevent this disaster, whatever else might be accomplished, came to be looked upon as reprehensible.

The old-time exploratory trepanations, which had unexpectedly resulted in giving relief from pressure, had usually been designed to expose lesions of the paracentral convolutions, and it was customary for the neurologist, in accordance with prescribed measurements and angulations, to mark out the fissure of Rolando on the scalp prior to the operation. Unfortunately, however, the very fact that tumours in this surgically accessible region were most frequently diagnosed, made it inevitable that a hemiplegia would ensue from discontinuity of the pyramidal fibres in the subsequent herniation.

Wagner, to be sure, had long before introduced the idea of an osteoplastic flap (1889), but this, in the hands of those who first attempted it was a matter largely of mallet and chisel, or of slowly nibbling a gutter in the bone with special forceps, of which there were many ingenious patterns; and it was not until the wire saw of Gigli was employed (1897) for the cutting of these bone flaps that the temporary osteoplastic cranial resection for exploratory purposes came to be a really practicable operation.

Neither patient nor surgeon likes the idea of a large cranial defect, however great the relief from pressure headaches; and both parties were in equal dread of the paralytic consequences of a protrusion involving the paracentral convolutions. The Wagnerian procedure promised to offset these complications, but unfortunately it was soon found that when an osteoplastic flap was turned down and the dura subsequently opened in the presence of tension which could not be relieved, it might be impossible to replace the flap because of the bulging brain; and it was for this reason, I assume, that Horsley abandoned the making of these flaps as a matter of general principle. The difficulties, however, can usually be overcome by what is known as "a combined procedure," in which the large flap essential for thorough exploration of the hemisphere is reflected with its base to the temporal region where, under the protecting muscle, a bone defect with opened dura can be made in the same situation and with the same purpose in view as when the ordinal subtemporal decompression is made from outside in. In the general run of cases the outward dislocation of the relatively "silent" temporal lobe then makes possible the replacement of the bone flap. . . .

But essential as the technical features of cranio-cerebral operations may be, these are dull matters to most people, and I prefer to dwell on what goes before and what follows them; on the preliminary studies which lead up to the diagnosis; and on the histopathological nature of the lesion so far as it affects prognosis and the surgical end-results. If the tumour question is to be covered as a whole, these are its more intellectual aspects; and my pupils, I am proud to say, have made contributions to diagnosis and symptomatology which are no less important than the additions which may have been made to mere craftsmanship.

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[1] Horsley, in 1890, pleaded with the clinicians to agree on a definite probation period of drug treatment and suggested six to eight weeks, instead of as many months, as the time limit. Three years later Allen Starr proposed as a compromise a preliminary three months' trial with drugs, after which, if cure had not resulted, surgical measures should be resorted to.

Matters Diagnostic.—There were two important instruments—the ophthalmoscope and the perimeter—with which at the outset we had to familiarise ourselves, for it was an imposition to ask our ophthalmological colleagues to give the time necessary for the often daily observation of the changes in eye-grounds and fields that we were anxious to follow. Fortunately for us, the invention of the electric ophthalmoscope at about this time made possible the bedside employment of this indispensable instrument and did more to popularise its use than the vigorous though vain appeals to the profession, even of such as Hughlings Jackson and Clifford Allbutt, in the years gone by.

The perimeter of the two is the more difficult instrument, for it entails an interpretation of the patient's subjective responses, and Dr. Bordley and I were led at the very outset into a misinterpretation of our findings in describing the interlacing of the colour fields as an early evidence of pressure. However, this error, soon corrected, proved to be not wholly a liability, for it encouraged us and others to employ perimetry in the routine examination of all tumour cases; and this led to a series of papers on the distortions of the visual fields with Dr. George Heuer and with Dr. C. B. Walker, whose contributions to the subject are well known to ophthalmologists. Perhaps the most valuable disclosures were: (1) the progressive changes in the field mentioned in my last lecture as accompanying the usual hypophysial adenoma; and (2) the advancing homonymous defects on which we place great reliance in the diagnosis of temporal lobe lesions.

Though a brain tumour, even a large tumour as is well known, may be accompanied by no changes in the eye-grounds or fields, when these changes are present, as one or both usually are, and are followed from day to day, they prove the best possible gauge as to whether the process is advancing or receding. The neuro-surgeon, in short, needs for his daily use the ophthalmoscope and perimeter, no less than the physician, in following the condition of a consolidated lung, needs his stethoscope. No disinterested second party can be satisfactorily called upon for these purposes. What happened when the anatomist ceased to make his own dissections and employed a barber for the purpose is a matter of history; nor is this a far-fetched comparison.

These instruments, to be sure, the ophthalmoscope and perimeter, were in the hands of our predecessors, over whom, however, we are enormously advantaged by another instrumental aid to diagnosis, the X rays. Stereoscopy and the improvements in rontgenography which have followed the introduction of the moving diaphragm enables us in many cases not only to confirm our clinical diagnoses, to assure us by tumour shadows of the nature of the lesion and its precise situation, to lateralise it either by what Dr. Naffziger calls the pineal "shift," or by Dr. Dandy's method of ventriculography, but at the same time the rays give us promise of therapeutic aid as well.

But with all said and done, no instrumental aid to diagnosis can equal in importance a detailed and exact history of the symptoms in the chronological order of their appearance. This must ever remain our chief reliance, and the ability to elicit a dependable and correct clinical story is an art requiring perhaps even greater experience and skill than the making of a detailed neurological examination.

In assembling the clinical and laboratory data he regards as essential, the neuro-surgeon has evolved his own peculiar programme. This differs considerably from that generally followed by neurologists, since we have a somewhat different therapeutic objective; and in view of the great number of patients under the suspicion of harbouring a brain tumour who pass through our hands it would be humiliating did we not become more adept in making a diagnosis and giving a prognosis than those who see these cases less often, even had we not the added advantage of immediately checking our conclusions and correcting our mistakes by the invaluable experiences of exposing and dealing with the lesion on the living subject.

An operating surgeon is a peculiar animal. Of this perhaps no one is more aware than surgeons themselves, should they stop to analyse their conditioned reflexes. There is an unexplainable mental process that precedes what is known as a surgical inspiration, or to use an undergraduate's vulgarism, a surgical "hunch." This means nothing more than that after blindly puzzling and agonising over a difficult problem in the effort to determine just what course to pursue, there is a sudden and unaccountable clearing of obscurities, and an operator enters upon his task with a conviction of just what he will encounter and just what will happen, as though he were possessed of a sixth sense. I think most surgeons are more or less conscious of this state of mental preparedness for what to others may seem a desperate throw. But there is nothing uncanny about it; it is little more than the subconscious fusion of past experience which concentration brings to bear on a given problem. And as these inspirations in difficult cases are the outgrowth of personal and repeated bedside studies of the patient whose equation also enters into them, he who neglects this portion of his work and merely operates at the behest of another misses much.

No less should the surgeon and his staff shirk the responsibility of the detailed subsequent study of the tissues. Only by familiarising himself with the microscopic appearance of the lesions with which he is to deal and by making his own post-mortem examination of his fatal cases can the operator's experience be properly rounded out. He otherwise becomes a mere tool, misses all the intellectual satisfaction which should pertain to his work, and his technical facility is prone to become developed out of all proportion to the soundness of his judgment.

Matters Pathological.—On the old basis, when one group pronounced on the diagnosis, another group performed the operation, and a third was left to study the histopathology of the lesion, no one was sufficiently concerned thoroughly to study the case as a whole and to follow the victim of the disease to the end, for better or for worse. The surgeon unquestionably is, or should be, the person most vitally interested, the person most likely to take the trouble to assemble and weigh all the facts on which subsequent operations and the patient's ultimate fate may depend, the person, moreover, whom the patient is most likely to keep informed of his progress.

Twenty years ago it was the usual custom for the brain, on its removal at autopsy, to be promptly sectioned according to the time-honoured method of Virchow, which would assuredly bring to light a concealed lesion, but would at the same time permanently destroy the topographical relations of the lesion and its effect upon the brain as a whole, which, to the surgeon, is a matter of paramount interest. I therefore cannot sufficiently express my obligations to my pathological colleagues, first at the Johns Hopkins and in after years at the Brigham Hospital, for their generosity in making it possible for us to conduct our own post-mortem examinations on these cases.

This privilege has put in our hands a rare collection of tissues which are continually worked over; and since the brains have all been "fixed" in situ before their removal, it has been possible for us to study and restudy them at our leisure. There could scarcely be a more informing process than to review the clinical history with such a specimen in hand, and the gross examination of these tissues in this process has incidentally led to certain observations of interest relating to foraminal herniation, the vascular strangulation of nerves as a source of false localising signs, and so on.

But of even greater value has been the opportunity this collection of specimens gives for the periodical reinvestigation and reclassification of the tumours from a histological point of view as our familiarity with their differing clinical behaviour widens. . . .

So it is the neuro-surgeon's present ambition to concentrate upon one kind of tumour after another in a given situation, rather than to discourse, as we were once accustomed to do, upon brain tumours of all kinds on a broad front; for though they have certain behaviouristic features in common, their dissimilarities rather than their resemblances is the important thing. And there is an ever-increasing number of lesions which we can now, with a fair degree of accuracy, actually visualise and so be the better prepared to approach with the fewest strokes. One may gauge his shots better and be less likely to get into the rough when he is familiar with the course.

This allusion prompts me to mention still another element in all this not to be ignored. The results of a series of operations for a given lesion in a given situation provides a score for the surgeon to play against; and an audience north of the Tweed need not be reminded of the importance of this as an incentive in improving one's game. Only by a carefully checked and posted score, such as is now available both for the acoustic tumours and for the pituitary adenomas, can a tentative "par" for the procedure in question be established. So we are constantly striving to better our record on the double basis of lower mortality percentages and of longer and more livable survival periods in the case of the more rapidly growing tumours. A neuro-surgeon's responsibilities would be insufferable if he did not feel that his knowledge of an intricate subject was constantly growing—that his game was improving.

Certain mid-cerebellar gliomas of childhood which Dr. Bailey and I have recently described as "medulloblastomas," may serve to illustrate my meaning. These tumours, composed of undifferentiated cells, are among the most malignant and, from their situation over the roof of the fourth ventricle, rapidly fatal of all intracranial new growths. Five years ago we would no more have presumed to foretell the presence of one of these lesions than we would have ventured to remove it if it happened to be exposed in the course of an exploration. The average survival period of these cases, if left to run their course, proves to be six months from the time of onset of symptoms; this period may be prolonged on the average for another six months by a suboccipital decompression, with or without fragmentary removal of the tumour, whose activity, meanwhile, may perhaps be checked by radiation.

With this fore-knowledge we have become more and more radical in attacking these lesions, and now have a case living three years after what appears to be a total removal at a second operation; and there are a number of other children who remain free from symptoms well over the six months' period, which encourages us to feel that we are making progress and that the isolated three years' case was not purely accidental. But this matter of score, even for brain tumours of a single kind, becomes increasingly complicated as our tumour list has grown, and to keep abreast of our changing percentages and shifting diagnoses requires the undivided attention of a highly trained secretary, who keeps in close touch with the living patients and their physicians.

Someone has remarked that all this attention being paid to brain tumours has caused them to multiply. There is a modicum of truth in this somewhat Hibernian statement, for tumours unsuspected in times gone by are now uncovered, and it is not an exaggeration to say that more patients with presumed or proven intracranial tumours annually pass through a modern neuro-surgical clinic than were seen in a lifetime by those of a past generation who were interested in the subject. But though we may be more alert than our predecessors to recognise them for reasons that I have mentioned, the tumours with which we have to deal to-day, and which we have thus unwittingly bred, are from a percentage basis quite different from those of 30 years ago.

In a much-quoted paper read by Byrom Bramwell before the Medico-Chirurgical Society of Edinburgh on Feb. 21st, 1894, there is recorded a series of 50 personally observed intracranial tumours which had been disclosed at autopsy. In half of these cases the lesion was secondary to a scrofulous, malignant, or syphilitic process elsewhere in the body, and most of the others were clearly inoperable gliomas. Only 6 of these 50 cases, it is stated, might have been favourable for operation had a localising diagnosis been possible—a sorry outlook indeed for the surgeon of those days.

Nor were the tumour lists subsequently compiled by others from the general literature of the subject any more encouraging. One of the most optimistic of neurologists in his unchanging advocacy of surgical intervention in brain tumours has been M. Allen Starr, of New York, and yet in his compilation (1893) of 300 tumours there were 193 tuberculomas, mostly in children; indeed, tuberculous and luetic lesions comprise 71 per cent. of his assembled cases, whereas they represent less than 4 per cent. of our present-day tumour list.

Tumour Classification.

One essential to the dissemination of information is the coincidental adoption of some convenient term which serves to convey a definite meaning, however ill-chosen it may happen to be. In our early efforts to subdivide and tabulate our growing list of tumour cases we came to group them in the following three major categories: (1) the *tumour suspects*; (2) the *unverified tumours*; and (3) those *histologically verified*. The purpose of these subdivisions has been made clear from time to time by one or another of us, and needs at this time only a brief word of explanation.

In their desire to eliminate the possibility of an intracranial growth as the cause of persistent headache, disturbances of vision, convulsions, and so on, many physicians send their patients primarily to the surgical clinic for examination, and this group of cases puts our diagnostic capacity for differentiation severely to the test. They represent the old-time "pseudo-tumour" group, and among them occur examples of cerebral arterio-sclerosis, chronic abscess, aneurysm, cisternal arachnoiditis, subdural hæmatomas, multiple sclerosis, retrobulbar neuritis, mental derangements, and a multitude of other disorders which may be exceedingly difficult to distinguish from tumour and which are listed as "suspects" to be kept track of until the diagnosis comes to be assured in one way or another, should there be any immediate doubt about it. I do not know which is the greater source of humiliation—to operate unnecessarily upon a patient for a pseudo-tumour syndrome and to find merely an œdematous and arterio-sclerotic brain, or to send a patient to an asylum and learn a year or so afterwards that a frontal meningioma has been found at autopsy.

The unverified cases comprise the group of unlocalisable or inaccessible tumours whose existence is betrayed by an unmistakable tumour syndrome and for which temporary palliative measures may have been carried out. The list naturally contains many examples of tumour which will subsequently become verified by secondary operation or by autopsy, but it also includes those cases in which the story has already been closed and no post-mortem examination made. The criterion of verification rests on the microscopic examination of tumour tissue, for even if the lesion has been exposed at operation and its presumable nature recognised, without the actual histological study of a fragment removed for this purpose it is classed as unverified.[2] . . .

With this preliminary explanation to account for the presence in our records up to Sept. 1st of 513 tumour suspects and of 584 unverified tumours, we may turn to a more detailed consideration of the list of verified tumours grouped in Table I. under their family names.

TABLE I.—*Verified Tumours to Sept. 1st, 1925.*

Gliomas (varia)	492
Pituitary adenomas: Chromophile, 50; chromophobe, 154; mixed, 15..	219
Meningiomas (dural endotheliomas)	141
Neurinomas (acoustic)	100
Congenital tumours: Craniopharyngeal pouch cysts, 55; cholesteatomas and dermoids, 8; teratomas, 4 ..	67
Granulomatous tumours: Tuberculomas, 24; syphilomas, 13	37
Metastatic and invasive tumours: Carcinomas, 27; sarcomas, 13; hypernephroma, &c., 4	44
Papillomas (choroid plexus)	7
Blood-vessel tumours (pial): angiomas, 9; angio-endotheliomas, 5; peritheliomas, 3	17
Miscellaneous and unclassified	22
Total	1146

What will first of all be noted is the subordination, in this modern list, of the lesions which dominated those of some years ago. It is gratifying to see that the infectious granulomata represent so small a percentage of the cases. Whether this means that these lesions are disappearing as tuberculosis and syphilis are getting under control is not certain, but we may at least assume this is the case. Certain of the other tumours, the papillomas and the meningiomas, have been sufficiently commented upon in their connexion with the cerebro-spinal fluid pathway, as have the hypophysial adenomas and the craniopharyngeal cysts in their relation to the pituitary question. Special reports have been made on the cholesteatomas in the series, and during the past year Dr. Boris Fried has undertaken a special study of the blood-vessel tumours, some of which had gravitated to the group of unclassified tumours; and a few others, through inadequate study, had come to be included among the gliomas. Moreover, the familiar acoustic tumours which I have just cited as an illustration of the importance of concentrating upon neoplasms of a single type in a single situation have perhaps already had sufficient attention paid to them for a short address, particularly since I wish for the remainder of the time to dwell upon the hitherto much neglected growths which outnumber all others—the gliomata.

THE GLIOMAS IN PARTICULAR.

Mere numbers of cases, however, mean little. It is what is done with the few that actually counts; and numbers, even though they add to personal experience, may in reality prove a handicap to the advancement of knowledge by absorbing the time which might otherwise be spent in assuaging curiosity. All neuro-surgeons must certainly have had their curiosity aroused by the undependable behaviour of the gliomas after operation. Why were some apparently so favourable, others so malignant? How could one possibly account for divergent experiences, such as were had in cases like the following?

1. From the cerebellum of a young man of 23 a large tumour was removed in 1910. The diagnosis was "glioma." He was given a *bad* prognosis, but there has been no recurrence and he remains well and free from symptoms now 15 years later.

2. An apparently benign tumour was enucleated from the right hemisphere of a man of middle age. He was given a *good* prognosis. The pathological diagnosis again was "glioma"; and he died of an extensive recurrence within three months.

3. Two years ago a large subcortical tumour mass was removed from the left hemisphere of a woman of 43, who was rendered thereby almost completely hemiplegic and aphasic. It proved to be a "glioma" and the prognosis seemed hopeless. She has recovered, and except for a slight residual of her paralyses considers herself well, and is earning her livelihood as an expert photographer.

4. In a young man with advanced cerebellar symptoms a large "gliomatous cyst" of the right cerebellar hemisphere was merely evacuated. He remained well for 13 years when there was a return of his former symptoms, which led to a secondary operation, and a solid "glioma" was successfully removed from the situation of his former cyst.

5. A woman of 36 was operated upon in 1916 because of persistent Jacksonian seizures originating in the right face. There were no evidences of tumour and the bone flap was replaced. Nine years passed before she again came under observation. Her attacks during this long interval had been moderately well controlled by drugs, but she had begun to notice a progressive weakness of her face and arm and a defect in speech. Re-exploration disclosed an infiltrating "glioma" of the cortex.

These inexplicable experiences come readily to mind and the list might be indefinitely prolonged. Generally speaking, the gliomas have heretofore not only been the *bête-noire* of the surgeon, but a most amorphous subject to the pathologist. Yet they are unquestionably the most interesting of all intracranial tumours from many points of view. In our efforts to classify them from their surgical aspects in years gone by, about the best we could do was to divide them into the gliomatous cysts, the cystic gliomas, and the non-cystic gliomas.

We were aware, of course, that a tendency to cystic degeneration was not only common, but was in a certain respect favourable; and three years ago Dr. Paul Martin made a special end-result study of the gliomatous cysts, which served to show that the expectation of life after operation in these cases was at least as good as that for malignant tumours elsewhere in the body, such as cancer of the breast, for example. This was an encouraging disclosure, but it was not based on an histopathological study of the varieties of glioma which were concerned, nor were we then capable of differentiating them. Moreover, we had hit upon a most baffling type of lesion in our first effort to discourse upon a specific glioma in a given situation—namely, that involving the optic nerves and chiasm.

It is commonly assumed that a glioma, in spite of its degenerative tendencies, is a tumour of such hopeless malignancy that its attempted extirpation, however radical, is inevitably followed by recurrence; and there was some reason to believe that the mere operative meddling with the lesion was likely to stir it into increased activity. Here, then, was a lesion representing the chief bulk of our work, so far as tumour operations were concerned, cut off from the prospect of any surgico-therapeutic aid, apart from the mere temporary palliation of symptoms.

But in the course of a long and largely discouraging experience in dealing with these lesions, there had been a number of most unaccountable happenings. There were mystifying cases in the series like some of those just cited, in which either an extensive tumour, unquestionably glioma, had been found on the surface of the brain and been abandoned as hopeless; or in which a similar tumour was encountered and an obviously incomplete removal undertaken; or ones in which, after a radical extirpation, a pathological report of "glioma certain to recur" was returned; and yet the patients had remained well for years, free from any indications either of progression or return of the growth. From this only one conclusion could be drawn: that gliomas differed markedly in their behaviour under variable influences which were unknown, or else that there were many different kinds of them.

To the unpromising task of disentangling these true tumours of the nervous system, which so greatly preponderate over all other intracranial neoplasms, Dr. Percival Bailey and I set ourselves three years ago, he devoting himself to an investigation of their finer histology, far the most onerous and specialised part of the work, my small portion being to correlate his findings with the clinical histories and surgical experiences.

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[2] We were led into making a single exception to this rule in the case of the gliomatous cysts whose yellow, clotting fluid contents are sufficiently characteristic to justify the diagnosis of glioma 99 times in 100. However, had we then known that the benign peritheliomas may undergo a similar cystic degeneration we would probably not have made even this exception, though these latter tumours are exceedingly rare.

To be sure, many different varieties of glioma have been described in the past, and in a sense no two gliomas are precisely alike if one takes into consideration size, manner of growth, situation, gross appearance, and microscopical architecture. But so complex had the matter of histopathological differentiation become that in our own pathological laboratory, as in most others I assume, the simple diagnosis of glioma, with little attempt at characterisation, served to cover the entire group. The only exception to this was in the case of certain distinctive tumours called neuroblastomas, which, as a matter of fact, we have now come to believe are not composed of neuroblasts.

It was necessary, of course, to begin at the beginning, and Dr. Bailey set out to familiarise himself with the normal glial elements and their reaction to the specific stains, it being a natural expectation on our part that could the several varieties of cells known to constitute the supporting substance of the central nervous system be identified in the normal tissues, the cytoplasm of these cells would not lose its specific tinctorial affinities even when they had acquired neoplastic tendencies.

Needless to say, the several glial elements have long been objects of study, even though neurohistologists, following Golgi, have been more interested in the neural than in the supporting tissues. The difficulty has been to find dyes with a specific affinity for the cytoplasm of the several glial elements which would leave the remainder of the tissue largely unstained; and to the contributions of Ramón y Cajal and his pupils neurology is almost wholly indebted for success in overcoming these difficulties. Others, of course, had been intrigued by the same problem, one of them that brilliant Scot, the late W. Ford Robertson, who 25 years ago described and pictured as "mesoglia" what Cajal calls the third element, and Hortega the oligodendroglia, those small round cells whose scanty cytoplasm is so difficult to stain and which abound near blood-vessels in the long fibre tracts of the central nervous system. But his method is one of the lost arts; at least, the platinum salt he employed, or believed that he employed, even in Bailey's practised hands, gives mediocre results not to be compared with Robertson's original preparations, some of which his son has been kind enough to send us. . . .

During the progress of this work descriptions of some of the more easily identifiable tumours, such as those composed of ependymal cells and of the pineal elements, have been published; and more recently the common mid-cerebellar gliomas of children,[3] composed of undifferentiated cells, have been made the subject of a special report.

Meanwhile the tissues of all the glioma cases in our possession were being recut and reinvestigated by the newer histological methods, and as the series up to January of 1924 proved to contain of the various types a sufficient number—viz., 412—of examples for the purposes of clinical correlation, this was then separately undertaken. Accordingly, from the clinical histories, tabulations were made of the survival period from the onset of symptoms, as well as from the time of operation for the cases up to this date, in correspondence with each of the histopathological subdivisions.

We had no preconception of what the results would show, though, had we been inclined to make prophecies before the figures were spread before us, it might have been anticipated that, other things being equal, the tumours composed of less well-differentiated elements would have the shortest antecedent history with the briefest post-operative survival period, and, conversely, that those composed of the more highly differentiated glial elements would have a longer pre- and post-operative story. We were, however, quite unprepared to find what the following highly condensed table betrays (Table II.), that certain definite tumour types show a longevity far and away beyond what one would expect for a glioma. The table, in other words, serves to show us the kinds of glioma that had seemingly responded so favourably to surgical intervention and to roentgenisation as to have been the source of our previous confusion.

TABLE II.—*Average Survival Period in Months for the Classified Gliomata.*

	Months.		Months.
Medulloepithelioma ..	8	Astroblastoma	28
Pineoblastoma	12	Ependymoma	32
Spongioblastoma multiforme	12	Spongioblastoma unipolare	46
Medulloblastoma ..	17	Oligodendroglioma ..	66 +
Pinealoma	18	Astrocytoma protoplasmaticum	67 +
Ependymoblastoma ..	19	Astrocytoma fibrillare ..	86 +
Neuroblastoma.. ..	25		

The details of this long study which is in process of publication need not detain us; it may suffice to say here that up to Jan. 1st, 1924, we had 412 so-called verified gliomas with which to deal. From these many eliminations had to be made: the cases "verified" merely on the basis of cystic fluid; those in which tissues had been improperly preserved for our purposes; certain atypical tumours which as yet baffle classification, and so on.

Table III., which lists the total number of verified gliomas in the series brought up to date, gives a sufficiently clear idea of the proportion of the tumours we have succeeded in classifying, and our reason for discarding about a third of them which fail to meet the criteria essential for the purpose.

TABLE III.—*Verified Gliomas to Sept. 1st, 1925.*

Verified by cystic fluid alone	54
Unclassified because differential study impossible ..	61
Unclassified gliomas of optic chiasm, pons or mid-brain: Optic chiasm, 12; brain stem, 19	31
Unclassified for other reasons: Atypical gliomas, 24; transitional forms, 6	30
Classified: Medulloepithelioma, 2; medulloblastoma, 41; pineoblastoma, 4; pinealoma, 7; ependymoblastoma, 6; ependymoma, 8; spongioblastoma—multiforme 100, unipolare 9; neuroblastoma, 3; astroblastoma 15; astrocytoma—protoplasmaticum 61, fibrillare 49; oligodendroglioma, 11	316
Total	492

Tables of classification are forbidding objects with which to punctuate a lecture. But there are one or two things to which, in passing, I may call attention. It will be seen in the first place that the 316 "classified" gliomas fall into three major groups—41 medulloblastomas, 109 spongioblastomas, and 110 astrocytomas. The medulloblastomas, to which I have already referred, are so malignant that when they once break through the limiting pia they tend to spread in the subarachnoid space in such a fashion as to have led to the term "sarcomatosis of the meninges." The spongioblastomas are scarcely less malignant and represent the so-called gliosarcomas of the older literature which have given their bad name to these tumours as a whole. But with the astrocytomas it is an entirely different story in view of their average survival period exceeding 86 months or over seven years. And when one considers that these 110 astrocytomas, together with the oligodendrogliomas which are equally favourable, represent approximately 40 per cent. of all the gliomas, the neuro-surgeon may feel much heartened in his tasks.

What all this means to us from the important standpoint of prognosis no less than of treatment is incalculable. But there is one thing more of which we are greatly in need—namely, the development of more rapid laboratory methods, if the clinic is to get the full benefit of these classified diagnoses.[4] What the surgeon must cultivate is the ability to tell with some exactitude just what kind of glioma he has exposed, and in the past it has taken so long to fix, to cut and differentially to stain the tissues that his picture-memory of the gross characteristics of the tumour, in spite of an operative sketch and a careful description, has become so faded before the exact returns come in, as to have lost much of its permanence. Moreover, the patient, as like as not, has in the meantime been discharged, and since the recollection of his particular lesion has become overlain by other impressions, it is difficult to get a dependable composite of one's operative and microscopical pictures.

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[3] These are rapidly growing tumours which have been the source of great confusion since they have been variously described as "neuroblastomas," which is distinctly a misnomer, and as "round-celled sarcomas," because of their tendency to "infect" the leptomeninges, which is still worse. Dr. Bailey originally gave to these unmistakable tumours the name *spongioblastoma indifferentiale*, but since Strauss and Globus first used the term *spongioblastoma* for quite another lesion, we have gladly given way to them and have settled upon the term *medulloblastoma* as a suitable designation.

[4] Some tentative short cuts in this direction with promising results have been made by Miss Grace Hiller who has become highly efficient in the specialised technique of staining these tissues.

I may give an illustration of what this all implies by the story of a patient who at the moment has just left the hospital after the removal of a glioma from her left hemisphere. She is the wife of a physician whose experience with brain tumours had led him to expect the worst, and when what I took to be a large spongioblastoma was uncovered, I feared that his apprehensions would be fully realised. The soft, infiltrating tumour, so far as possible, was removed partly by dissection and partly by suction, and a thin block sent to the laboratory was put through by a shortened process in three days. It shows a pure protoplasmic astrocytoma which completely alters the prognosis in the case, to the great relief of all concerned. What we must search for, however, is a still more rapid process than this—one which will make it possible to get the histopathological returns while the operation is still in progress.

These, then, are some of the objectives towards which we are striving. I have from time to time put into writing some generalisations about the special field of neurological surgery. The first of these papers, written just 20 years ago, sounds on reperusal very juvenile in its discussion of the ætiology of choked disc; of palliative operations for purposes of decompression; in its chance remark that possibly someone some day might even venture to operate on a pituitary tumour. By slow processes we have come to broaden our horizon, but we neuro-surgeons do not for a moment forget that we are merely standing on the clustered shoulders of those herein unnamed persons who laboriously worked out for the benefit of our generation the development and finer anatomy of the brain, who discoverd the localisation of its functions, untangled the pathways of its impulses, determined the clinical expression of its lesions, bequeathed to us the instruments of precision we depend upon, laid the foundation-stones of modern cranio-cerebral surgery, and much more besides. We would betray their expectations of us had we not managed to cultivate a few flowering plants in the large field of neurology in which they did the spade-work.

There is, therefore, nothing novel in all this that I have laid before you—nothing, I fear, that Andrew Cameron would have felt was a distinct contribution to practical therapeutics. The complicated act of diagnosing, of localising, and of removing a brain tumour is based on long-established anatomical and physiological principles, and it is time we paid more attention to a detailed study of the lesions themselves. This will require a more intimate knowledge than we possess of their cellular composition, for which purpose aid must be sought from chemistry and biophysics, all of which merely shows how closely interlocked with other sciences any research in clinical medicine has come to be. And, in closing, I would like to quote a statement made by Ranvier in addressing the histologists in regard to his discovery of the clasmatocytes:—

> "Everybody knows [he said] that even objects which are quite apparent escape our observation when we are not yet aware of them, whereas we notice them at once after having learned to observe them. That is why it is so difficult to make discoveries, which afterwards seem so simple, one wonders as to the merits of having made them. What more easy to-day than to demonstrate the presence of glycogen in the liver! Yet Claude Bernard, who was undeniably a man of genius, only arrived at this after many years of research and by a series of repeated trials."

DIPHTHERIA IMMUNISATION IN A METROPOLITAN BOROUGH.*

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IN view of the satisfactory results obtained by R. A. O'Brien in the Holborn (Poor-law) schools, arrangements were made in 1922 to render the measure available for the general child population of Holborn. The results obtained are summarised in Tables I., II., and III.

The results of the Schick testing were very much the same as those found in all other urban areas; we have, however, analysed them in connexion with the immunity to diphtheria of various members of the families dealt with. The last column in Table IV. shows the number of exceptions (11·5 per cent.) to the expectation that positive reactions will be manifested only in the younger members.

TABLE IV.

No. of children in family.	No. of families.	Of which the members are—			
		All Schick positive.	All Schick negative.	One or more elders negative, younger positive.	One or more elders positive, younger negative.
2	97	71	6	13	7
2	43	19	4	14	6
4	14	5	—	4	5
5	8	2	—	4	2
6	2	—	—	2	—
7	2	—	—	1	1
—	166	97	10	38	21

In one family of five children, twins (F.) of 2–3 years of age were both positive; of twins of 7–8 years, one (M.) was positive, the other (F.) was negative.

In one family of three children one twin (M.) was negative, the other (F.) was positive, the latter had already been in hospital with diphtheria.

In one family of four, all Schick positive to the first test, two members were found to be Schick positive to the second test. The first of these (F. 4) was immunised some months previously to the second one (M. 1), and was further inoculated, being negative to the second test; the second child is not yet retested.

In another family, twins, one male aged 2 years when tested and one female aged 5 years when tested, were both Schick positive.

Routine Procedure.

The routine of the procedure carried out is as follows. The child is Schick tested at the Council's Maternity and Child Welfare Centre, and if susceptible to diphtheria is brought up by the parent at weekly intervals for the next three weeks for immunisation, and then at the end of another three months (formerly we tried for the period six to eight weeks) for re-Schick testing, when, if it happens to be still positive, it receives further inoculation. A modification of the routine occurs if from the Schick test it is seen that the child is particularly susceptible to protein reactions; in this case the 3 c.cm. of toxin antitoxin mixture are given in four or five doses at weekly intervals.

Although Park and Zingher recommend that Schick testing should only be applied to children over 5 years, it would seem inadvisable to dispense with the test as a routine at the present time in Holborn. It is a great satisfaction to nervous parents to think that there will be no inoculation unless susceptibility is proved.

Retesting is unpopular with parents, and the need for it does not help to increase their confidence in immunisation. Of 295 that have been retested 30

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* Opening of discussion at the Annual Congress of the Royal Institute of Public Health, Brighton.

TABLE I.

AGES OF PERSONS SCHICK TESTED, WITH RESULT OF TEST. (HOLBORN MUNICIPAL INFANT WELFARE CENTRE, 1922–23–24.)

Ages.	6 to 12 months		1 to 2 years.			2 to 3 years.		3 to 4 years.			4 to 5 years.			5 to 6 years.			6 to 7 years.		7 to 8 years.		8 to 9 years.		9 to 10 years.		10 to 11 years.		11 to 12 years.		12 to 13 years.		13 to 14 years.		14 to 15 years.		15 and above years.			—
Total for 3 years, 1922–24 ..	40		101			87		84			57			33			30		21		29		40		24		15		12		19		1		49			= 642
Result of Schick Test	Pos.	Neg.	Pos.	Neg.	Not read.	Pos.	Neg.	Pos.	Neg.	Not read.	Pos.	Neg.	Not read.	Pos.	Neg.	Not read.	Pos.	Neg.	Pos.	Neg.	Pos.	Neg.	Pos.	Neg.	Pos.	Neg.	Pos.	Neg.	Pos.	Neg.	Pos.	Neg.	Pos.	Neg.	Pos.	Neg.	Not read.	—
Total for 3 years	35	5	94	5	2	84	3	69	14	1	41	14	2	18	13	2	19	11	12	9	18	11	17	23	14	10	6	9	6	6	6	13	1	0	20	26	3	460 Positive. 172 Negative. 10 Not read.

TABLE II.

AGES OF PERSONS IMMUNISED.

Age.	6 to 12 months.	1 to 2 years.	2 to 3 years.	3 to 4 years.	4 to 5 years.	5 to 6 years.	6 to 7 years.	7 to 8 years.	8 to 9 years.	9 to 10 years.	10 to 11 years.	11 to 12 years.	12 to 13 years.	13 to 14 years.	14 to 15 years.	15 and above years.	—
Total for 3 years	30	77	70	53	31	14	23	11	13	14	11	6	4	4	1	6	= 368

TABLE III.

SCHICK TEST AND DIPHTHERIA IMMUNISATION. (THREE YEARS, 1922–23–24, AND 7 MONTHS, UP TO AUGUST 5TH, 1925.)

Total No. tested.		Result of test.						Immunisation of positives.																									
								Found NEGATIVE to re-Schick test after T.A.T.												Found POSITIVE to re-Schick test after 3 c.cm. T.A.T.				Total re-Schick tested.		Given 3 c.cm. T.A.T. Not retested.		Failed to complete three inoculations.		Inoculations not begun.		Inoculations still in progress.	
		Negative.		Positive.		Not read.		1 c.cm.		2 c.cm.		3 c.cm.		4 c.cm.		5 c.cm.		6 c.cm.		Given further inoculation but not yet retested.		No further inoculation given.											
C.	A.	C.	A.	C.	A.	C.	A.	C.	A.	C.	A.	C.	A.	C.	A.	C.	A.	C.	A.	C.	A.	C.	A.	C.	A.	C.	A.	C.	A.	C.	A.	C.	A.
718	57	180	34	530	20	8	3	9	0	11	1	241	3	5	0	1	1	2	1	10	0	9	1	289	6	144	0	42	5	35	9	20	0
775		214		550		11		9		12		244		5*		2*		3*		10		10		295		144		47		44		20	

* Refers to 10 persons negative to second re-Schick test after second course of inoculations.

C. = Children ; A. = Adults.

were found to be still Schick positive after three inoculations. The facts relating to these are given in Table V.

TABLE V.—*Results of 295 re-Schick Tests up to and including August 5th, 1925.*

Re-Schick tested after an interval of years or fraction of years.	Number retested after this interval. M. F.	No. found positive.	Age in years and sex of positives when first tested.	Negative to 2nd re-Schick test and total of T.A.T. given in all.
5/52	10 (6 4)	1	13, F.	Neg.; 4 c.cm.
6/52	3 (1 2)	—	—	—
7/52	6 (4 2)	—	—	—
2/12	19 (9 10)	1	9, M.	Neg.; 6 c.cm.
2½/12	10 (4 6)	—	—	—
3/12	31 (13 18)	2	(*a*) 8, F. (*b*) Ad., F.	Neg.; 4 c.cm.
3½/12	7 (3 4)	—	—	—
4/12	18 (11 7)	1	4, F.	*Neg.; 4 c.cm.
4½/12	2 (0 2)	—	—	—
5/12	7 (2 5)	1	2, F.	Neg.; 6 c.cm.
6/12	21 (10 11)	4	(*a*) 1, M. (*b*) 2, M. (*c*) 3, M. (*d*) 4, F.	— — — —
7/12	12 (5 7)	1	9, F.	Neg.; 6 c.cm.
8/12	8 (3 5)	—	—	—
9/12	7 (3 4)	—	—	—
10/12	9 (3 6)	1	4, F.	†Neg.; 5 c.cm.
11/12	3 (1 2)	—	—	—
1	5 (1 4)	1	9/12, F.	Neg.; 4 c.cm.
1–2	73 (37 36)	14	(*a*) 1, F. (*b*) 2, M. (*c*) 2, M. (*d*) 2, M. (*e*) 2, F. (*f*) 6, M. (*g*) 7, F. (*h*) 8, F. (*i*) 9, M. (*j*) 9, F. (*k*) 11, M. (*l*) 12, F. (*m*) 12, F. Ad., F.	— — — — — Neg.; 4 c.cm. — — — — — — — Neg.; 5 c.cm.
2–3	44 (21 23)	3	(*a*) 2, F. (*b*) 5, F. (*c*) 12, F.	— — —
Total ..	295 (137 158)	30	—	—

* Another child in same family (F.), aged 4 years, was negative.
† Three children in this group were members of one family: 2 negatives (M.), aged 2 years, (F.), aged 6 years; 1 positive (F.), aged 4 years.

In addition, one child re-Schick tested 15 months after 1 c.cm. T.A.T., was found positive, and two children retested after 3 c.cm. were on the information given by the mother considered to be slightly positive. Twenty of those positive on re-Schicking have been further inoculated, and ten of them further tested and found negative. Efforts are being made to continue the inoculation of the remaining ten. Of the 295 persons retested, 137 were males and 158 were females. Among the positive were 10 males and 20 females. Neither age nor interval seems to have any influence on the phenomenon. It would seem conceivable that some batches of toxin antitoxin or toxoid antitoxin might prove to be less efficacious than others. An analysis of the results obtained in Holborn would seem to indicate clearly that one batch of toxin antitoxin was less successful than the others; also that the toxoid antitoxin used was as efficacious as the toxin antitoxin. The toxin antitoxin used were all 3 L+ per c.cm. mixtures, the toxoid antitoxin contained toxoid diluted 1–10 with added antitoxin. (Table VI.)

TABLE VI.—*Batches of Toxin Antitoxin and Toxoid Antitoxin Compared.*

Designation of batch of toxin antitoxin mixture or toxoid antitoxin mixture.		No. of persons inoculated and retested.	No. of these persons found positive on retesting.
Toxin antitoxin mixture.	B. 346	58	2
	B. 475	24	3
	B. 654	26	1
	B. 671	61	15
	B. 671A ..	2	1
	B. 672A ..	30	2
	B. 617	34	1
Toxoid antitoxin mixture.	B. 1017	30	4
	B. 1090	14	1
	B. 1038	8	0
	B. 1018	8	0
Total		295	30

That considerable importance attaches to the retesting is shown by the fact that our one case of diphtheria among those treated occurred in a child who was given the routine three injections. The boy suffered from a severe attack of the disease, but recovered without any complications or sequelæ; his recovery was ascribed certainly by his mother to the inoculations of T.A.T. given after Schick testing.

A second case is said to have occurred in a boy (aged 8) also given the routine three injections. Two years later he was diagnosed (for the third time in his life) as suffering from diphtheria; no swab was taken. On admission to the M.A.B. Hospital he was first found to be swab negative, later swab positive, but was diagnosed as a case of diphtheria. The mother fortunately is still convinced that the boy did not suffer from diphtheria.

Reactions.

Our experience is that the reaction after the injection of the toxin antitoxin and toxoid antitoxin is in practically every case negligible. All we have to record is that in one child considerable swelling of the whole of the arm occurred, but the next day, when at the centre, she was running about and helping the other children eat their cakes; the swelling went down without any further result. Another, a boy of 10 years of age, his mother informed me, suffered with vomiting after each of his three inoculations and spent the next day in bed, but he and his mother stuck to it, and he was subsequently proved to have been satisfactorily immunised. In another child a small, hard, slightly tender nodule developed above the external condyle, but the tenderness only remained for a few days.

What of the Future?

Most of the attendances are the result of repeated efforts of persuasion and encouragement. Prejudice against inoculation is widespread; some of the most stubborn opponents of inoculation admit that if T.A.T. could be given in tabloid form or in spoonfuls they would agree to it. They object, in fact, to the introduction of animal products by means of a hypodermic syringe into the human body, but continued propaganda is sure to produce its results.

The aim of everyone who takes up the work must be to get all the children living in the area immunised as soon after they reach the age of 6 months as possible. In Holborn we have not reached this stage yet; the history of vaccination against small-pox suggests we never shall. But a local health authority is justified in considering that it has done all in its power to prevent loss of life and illness from diphtheria if it offers immunisation.

It might be expected that if the immunisation were carried out among the school population in a large town the parents would come to regard the procedure as more ordinary, and be prepared to allow the younger children to be immunised at infant welfare centres. Apparently it cannot be too often repeated that it is immunisation at a very early age that we want carried out; if it is delayed till school age half the deaths will have occurred. In London during three years, 1919–20–21, 52·5 per cent. of the deaths from diphtheria occurred under 5 years of age. Certainly if the immunisation could be completed at one visit the energy spent in looking up those failing to attend could be used in getting new recruits, and the parents would be spared much trouble.

At the present time efforts are being made to produce a substance which can be used to ascertain the susceptibility of the individual and at the same time to give some degree of immunity. Obviously experiments on these lines would seem to be concerned with the use of toxin as opposed to a toxin antitoxin mixture, but the methods used up to the present do not produce a toxin of sufficiently uniform strength to enable it to be used for routine immunisation.

Immunisation of Hospital Nurses.

A few words may perhaps be added on the need for the immunisation of hospital nurses. It would seem to be obvious that fever hospital nurses should be protected against diphtheria. I think it difficult to avoid the conclusion that all hospital nurses nursing in children's wards should be immunised. It must be within the experience of many of us that nurses in children's hospitals and subsequently the children themselves are often attacked.

It may be said that a nurse would have to be immunised against diphtheria, scarlet fever, and typhoid and the paratyphoid fevers; this is nothing. I imagine that many of us during the war were immunised against more diseases than these—those going East were protected against small-pox, typhoid and the paratyphoid fevers, cholera, dysentery, and plague. Who can show that we suffered any harm by taking advantage of the progress of science?

THE EFFICACY OF TRYPARSAMIDE IN THE CURE OF AFRICAN SLEEPING SICKNESS.

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EVER since the introduction, nearly 20 years ago, by Thomas, of atoxyl into the field of the therapeutics of trypanosomiasis, hopes have been alternately fostered and then relinquished in the attempt to cure certain human infections by the two human trypanosomes, *T. gambiense* and *T. rhodesiense*.

Complete and lasting success has accompanied the use of a variety of drugs in curing the hæmic and lymphatic infections which precede by intervals, varying from a few months to a few years, the migration of the trypanosomes from the blood-vessels and their entrenchment in the tissues themselves, especially those of the central nervous system. Up till the trial by Pearce (1920)[1] of tryparsamide, elaborated by the workers of the Rockefeller Institute for Medical Research, no valid claim had been advanced for anything but a temporary improvement in the signs and symptoms concomitant with this nervous involvement when really established, although the slighter degrees of it had been apparently arrested.

Before definitely making the claim for tryparsamide as a cure for such cases, based on our experience of the drug for the last four years, it may be well to review in brief the value and limitations of the main drugs and treatments in vogue up to the present.

Spontaneous Cure.

There exists a good deal of doubt as to whether this does really occur. One would expect from the well-recognised factors of varying virulence of the infecting strain of trypanosome and the differing degrees of natural and acquired immunity in the host that a fortuitous combination might result occasionally in a natural cure. The latest evidence in support of this contention comes from Todd (1924),[2] who reports eight cases found infected in 1911 alive and well in 1920, and one of these (no news of others) in 1924. He allows, however, the explanation of extreme chronicity as admissible. In our own series of 650 cases we have not a single instance of survival in good health among the few patients who have escaped, after diagnosis, any treatment whatever, although we are still watching a few cases who are apparently fit after but one or two injections. If some cases of early infection can result in a spontaneous cure, the consensus of opinion is that all cases (with the possible exception of those cited under the next heading) which have been proved to belong to the second class do eventually succumb to their infection.

Treatment by Atoxyl, with or without Tartar Emetic.

There is plenty of evidence to show that really early cases can remain to all intents and purposes cured after a single administration of one of these drugs—i.e., atoxyl, soamin, arsacetin, tartar emetic. Series of cases treated by one to three injections show varying percentages of cures according to dosage and the stage of disease reached, about which there is often no definite information. Even cases, the examination of whose cerebro-spinal fluid had proclaimed them to be in the second stage, have been apparently cured. Blanchard and Laigret (1924)[3] report five such cases alive and well from 6 to 15 years after treatment by atoxyl and arsenobenzols in doses so meagre and few that, in the light of experience with the vast majority of similar cases, such treatment could be disregarded as the primary therapeutic agency.

Opinion is now in favour of repeated injections of 0·015–0·02 g. per kilo body-weight, of atoxyl—i.e., maximum dosage. In a recent epidemic in our own region near Stanleyville about 250 patients have been thus treated in three years, and the percentages of cures and relapses to date are about equal. Treatment was carried out by native boys after diagnosis by the medical man, and consisted in weekly dosage of 1 g. to adults, to a total of 10 to 12 injections. Unfortunately, it was not practicable at the time of diagnosis to determine in all cases by lumbar puncture the exact stage of the disease.

The value of tartar emetic as an adjuvant to this treatment seems not to be very great, for although it is the stand-by of the veterinary surgeon, it is our opinion that its utility in human infections is confined to its use as a substitute for an arsenical should toxic amblyopia develop, or as a temporary trypanocidal agent in advanced cases where the onset of severe meningeal reaction is to be feared from immediate adequate dosage with arsenicals. Although tartar emetic alone has been known to cure even a case of infection with *T. rhodesiense*, yet no one would now use it to the exclusion of the arsenicals, and our experience goes to show that if there is any advantage in the combined treatment it is not commensurable with the increased risk and the visits required during the mass treatment of natives during an epidemic.

Treatment by the Arsenobenzols, &c.

The *arsenobenzols* have not been found to give results appreciably better than atoxyl, and their greater cost has prevented trial on a large scale. Now that continental firms are manufacturing "914" of excellent quality and selling it less than one-tenth the price charged by British firms, a further trial of these products might have been advantageous had not there been still better drugs available. The knowledge that they do penetrate the cerebro-spinal fluid suggests that they might have been more efficacious than atoxyl, the penetrability of which is probably less.

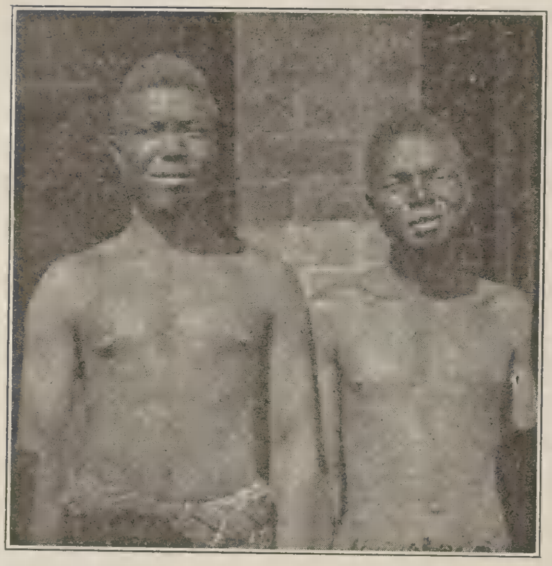
Intrathecal Injections of Drugs or Medicated Serum.—This method of attacking the nervous infection was tried by Reichenow in 1914, and retried by Marshall and Vassalo in 1920. Following their advocacy it was tried by many workers, including ourselves, but has now been abandoned as worse than useless.

Bayer "205," or Germanin.—Prolonged sterilisation of the blood and immediate temporary improvement in all patients, which continues in the early cases for many years, has proved the value of this drug. Yet our own series (1924)[4] of 17 cases in the later stages confirms the findings of Van den Branden and Van Hoof (1924)[5] that the value of this drug in nervous infections is less than that of atoxyl. This Dr. F. K. Kleine has admitted to us in correspondence on the subject, and is evident from the further reports received privately of his series treated in the Congo (1922).[6]

To recapitulate, therefore, there are a variety of drugs which are capable of effecting and maintaining sterilisation of the peripheral circulation for varying periods. Sterilisation is effected most quickly by tartar emetic, less so by atoxyl, and least quickly by Bayer "205," but the reverse order holds good for the maintenance of sterilisation when once effected. This brings out the real value of "Bayer" to the sanitarian concerned with the removal of infectivity. None of these drugs can, however, be relied upon to cure a case which has shown definite nervous involvement.

Cure by Tryparsamide.

Cases treated originally by Pearce and later observed by Van den Branden and Van Hoof, and cases by the last two workers alone at the Laboratory of Leopoldville, afford the very satisfactory figures of 100 per cent. cure of early cases, with unaltered cerebro-spinal fluid. We are able to report a similar success in five such cases, noted for from three and a half months to one year after treatment. Their figures for a series of 35 with altered fluid after an average observation of seven months was 45·7 per cent. still normal, but recent conversation with Dr. Van Hoof shows that the majority of these have remained well up till the present—i.e., an average observation period of nearly three years. These cases were not so far advanced and were more vigorously treated than our own series of 40 (1923 [7] and 1924).[8] Our latest published figure for non-relapse cases in this series was 40·5 per cent., but by the death of one of these (No. 146, Mbalika, the worst case of the whole series) the figure after two and a half to three and a half years falls to 37·8 per cent. It must be remembered, however, that these were all the worst cases one could find, averaging 630 cells per c.mm. in the cerebro-spinal fluid, and were treated by only one course of tryparsamide. The accompanying photograph speaks for itself.



Effects of tryparsamide in sleeping sickness:—*Left:* Case 73, three and a half years ago tryparsamide and 470 cells per c.mm. in the cerebro-spinal fluid. Apparently cured after 24 g. tryparsamide. *Right:* Case 150, 38 months ago tryparsamide and 760 cells per c.mm. in the cerebro-spinal fluid. Apparently cured by 26 g. tryparsamide.

Unfortunately, there are a number of cases which do not react so favourably to tryparsamide, so in claiming that the drug can cure we cannot claim that it is a cure for all cases. This fact is difficult to explain apart from the factors of varying virulence and different degrees of immunity. Personally, I feel that the latter is the most important factor. Pearce believes that the action of tryparsamide, which is only feebly spirillicide and trypanolytic in vitro, is due largely to its stimulation of natural defences.

That this defensive mechanism is largely dependent on the liver is suggested by work by Sei (1923),[9] who reported that extracts of the liver substance of Bayer "205"-treated guinea-pigs contained a greater concentration of therapeutically active agent in the infections of mice with *T. equiperdum* than those of any other tissue, not excluding the blood. It has also been shown that Bayer "205," though but feebly trypanosomicidal in vitro, becomes at once powerfully so when mixed with liver extract. Mignoli (1924)[10] has shown that the natural trypanosomicidal activity of adult human serum varies with the degree to which the liver cells are functioning. Acute diseases of the liver markedly, and chronic ones in less degree, exert very definite influences. The tolerance of arsenobenzols in syphilis varies also in a similar manner.

Clinical evidence is also forthcoming in support of this view, for all workers agree in the importance of removing hookworm from patients, the deleterious effect of the secondary anæmia produced by ankylostomiasis on the liver being well known. In two cases, complicated by an unrecognised bilharzial infection, we noted bad results during treatment; patients overdosed with atoxyl or tryparsamide often complain of abdominal discomfort and distension; a dirty tongue and highly coloured urine suggest liver trouble. They often put on a lot of flabby flesh, much to their annoyance, also suggestive of defective metabolism. Now that clinical tests for hepatic efficiency suitable for the busy clinician are being evolved, there seems to be a fruitful field for research in order to control treatment in the same way as for syphilis.

Suggestions for Treatment.

Our best control of treatment is the examination of the cerebro-spinal fluid for cells and albumin. This latter is simply effected by precipitation of the albumin in 1 or 2 c.cm. by trichloracetic acid 33 per cent., and comparison of the opacity with standardised bacterial emulsions.

It is convenient in treatment to use the common 10 c.cm. syringe, and as the dose of 4 g. should never be exceeded, a 40 per cent. solution is necessary in order that 4 g. may be given without refilling the syringe. This solution is arrived at accurately by the following simple rule, easily followed by native assistants. *Weigh x g. of tryparsamide and add 2x c.cm. distilled water.* For instance, 10 g. is dissolved in 20 c.cm. water and the resulting solution contracts to 25 c.cm. This is not too strong even for intramuscular injection.

The maximum tolerated dose must be arrived at gradually in advanced cases, but must be maintained whenever possible for at least ten injections, which may be either weekly or fortnightly. Adults will almost certainly relapse, if less than 0·05 g. per kilo body-weight is given, and children can stand almost double this amount—i.e., up to 0·1 g. per kilo, and will indeed tend to relapse without it. Thus a child of 14 weighing about 20 kilos can support as much as 2 g. weekly doses. Substitution of tartar emetic (not Bayer "205") for three weeks or a month, if toxic amblyopia develops, will generally allow resumption of former dosage again. In this connexion we may add that we have been using daily injections of sodium thiosulphate 0·45 to 0·9 g. at the first sign of amblyopia, but have no definite evidence worth recording at present as to its value.

A second short course should be given whenever possible six months after the first, the cessation of which is to be guided by progress and the condition of the cerebro-spinal fluid. It must be remembered, however, that the cerebro-spinal fluid will progress towards the normal limits subsequent to the cessation of treatment, if that has been thorough; and an excess of cells, even up to 50 per c.mm. may have entirely disappeared after three months.

If it is desired to combine the treatment with Bayer "205," we consider the most rational method is to alternate the two drugs for the first two or three weeks, giving one of each (not either) per week, and then continuing with tryparsamide. Continuation of Bayer "205" beyond the third injection is of very little use, expensive, and dangerous.

In conclusion, we affirm that tryparsamide can cure African sleeping sickness, although it does not always do so as at present administered, and that it should be the mainstay of our attack on trypanosomiasis. This principle has been adopted by the Belgian Government, which is responsible for the treatment of 50,000 cases annually.

I wish to express my thanks to the Rockefeller Institute for continued supplies of tryparsamide and to Dr. P. H. Manson-Bahr for much kind information and help.

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Medical Societies.

ROYAL SOCIETY OF MEDICINE.

SECTION OF PSYCHIATRY
JOINTLY WITH MEDICAL SECTION OF
BRITISH PSYCHOLOGICAL SOCIETY.

THIS joint meeting was held on Oct. 28th, Dr. R. H. COLE, the President of the Section of Psychiatry, being in the chair.

Sir MAURICE CRAIG opened a discussion on the

EARLY TREATMENT OF MENTAL DISORDERS.

He said that the field of mental disease was much wider than that of physical disease, since the mind was a function of the whole organism and mental disturbance might affect any or all of the organs of the body. There were many schools of thought among those who studied the mind; the science had grown up through mysticism, metaphysics, and materialism to determinism and the "new psychology," and now one, now another aspect had been uppermost. The biological, the psychogenetic, and the physiogenetic schools held widely different theories and had each had their period of supremacy. The great danger in which the science stood was that rivalry between the adherents of different theories would cramp their scope and hinder their advance. Beneath each theory lay a fundamental truth, for which the student should search impartially and not allow his devotion to one aspect to hinder him from thoroughly examining the others.

The Importance of the Emotions.

In surveying broadly the psychological side of mental disorder, he showed that the outstanding factor in every one was emotional disturbance. The early training of a child depended for its efficacy on a harmonious balance of feeling, and might be completely interrupted if this balance were disturbed. This hindrance of mental growth would inevitably reflect itself later on his reasoning side. Keenness of perception and response to stimulus were, perhaps, the measure of mental capacity, but the more richly a man were endowed with these qualities the graver were the effects of any disturbance. The physical as well as the psychic reactions were affected; fatigue interfered with the function of the internal glands by permitting toxins to invade the system, and a vicious circle of cause and effect was formed. He would leave psycho-analysis to its particular exponents, and would content himself with suggesting that many of the patients they claimed to have cured would probably have shown as good or better results under some other treatment. On the subject of early treatment generally, he laid stress on the need for carefully watching children for signs of mental instability. Prophylactic measures should be introduced into schools to nip in the bud the effects of overstrain and other bad influences. He strongly deprecated the habit of explaining away early mental symptoms. Students should be trained to examine mental symptoms together with physical, and to allow them equal weight in diagnosis. Surgeons were particularly liable to neglect the emotional factor in a patient, which might nevertheless make all the difference between success and failure in an operation.

The Toxic Factor.

Passing to the physical aspect of mental disorder, he laid particular stress on the importance of toxins, both endogenous and exogenous. One school of thought even held that all mental trouble was due to the presence of toxins. Idiosyncrasy was a leading factor, and he had seen such harmless food as eggs or mushrooms produce acute delirium. He mentioned the work of several authorities on the effect of endocrine disturbances on the autonomic nervous system, and their part in anxiety and depressive states, and cautioned his hearers against prescribing gland treatment without fully understanding what they were doing, but also against neglecting it altogether.

Sleep.

All authorities, he said, agree in theory on the importance of sleep, but do not always allow it the paramount importance it should have as the only certain means of restoring wastage. It was foolish to fear hypnotics, for the risk of producing addiction was negligible. Some physicians could think only in terms of bromide, overdoses of which he had found damaged the lining of the stomach and sometimes produced confusion, though small doses were valuable. In spite of the feeling of many practitioners against the barbitones, he had found dial and medinal consistently useful. They improved the metabolism and induced a natural habit of sleep. Sodium veronal and luminal were both better than bromide. If sleeplessness were relieved early it left no terrors behind it. He concluded with a plea that the public should be instructed to seek advice as soon as mental symptoms showed themselves, and to enter a mental hospital voluntarily. The general prejudice against mental hospitals could be removed in time with proper instruction and increased accommodation for voluntary patients.

The Case for Psycho-analysis.

Dr. W. BROWN agreed absolutely that there was a physical aspect to every mental disorder, and that the body should be thoroughly examined for septic foci and other causes of toxæmia. Caries, tonsillitis, constipation, and subacute appendicitis were frequent sources of infection. The chief damage was done to internal glands, especially the thyroid. Fatigue was an important factor, which should be met by prescribing rest. On the whole, however, he thought that physicians did not tend to neglect the physical aspect of mental disease, but that they frequently paid too little attention to the psychic aspect of physical disease. An important cause of mental illness was failure to adapt at some period of life, and the physical symptoms produced caused further mental reactions, forming another vicious circle. The physician should learn thoroughly both the physical and mental situation before he prescribed for a case, and decide the best treatment for each side. Mental disease was broadly divided into functional and organic disorders; it was an axiom that no functional disturbance could occur without a corresponding change in structure, but a disorder was called functional if these changes righted themselves when it was cured by psychological treatment. The change of structure in an organic disease had to be treated physically; it was irreversible.

Hysteria and Hypnosis.

A very good example of the functional disorder where the change in structure was reversible was hysteria, the symptoms of which were extreme suggestibility, restriction of mental functions, and psychic automatism with the appearance of various phobias and obsessions. It was, like many other morbid mental conditions, due to failure of adaptation, and might, if neglected, develop into a psychosis. It was distinct from psychasthenia and the other psychoneuroses, but until it became chronic its symptoms were very indistinct. Its forms and causes differed and required different methods of treatment. He had found that hypnotic treatment gave splendid results in a great many cases of "war neurosis," where the symptoms were somnambulism, fits, and amnesia. The treatment was based on the fundamental psychological principle of re-association, and consisted in reproducing the somnambulism, fits, or key incidents by hypnotic suggestion, and allowing the subject to remember the process. By this means all symptoms were stopped in a very short time, the repressions that caused them were cleared up, and the mental integrity re-established. The test of success was a progressive diminution in the susceptibility of the patient to hypnotism. This method was, of course, nearly always combined with a detailed psycho-analysis.

Psycho-analysis.

Patients of psychasthenic and many other neuroses could not be hypnotised, and the methods he used were general analysis (an armchair interview where the patient talked of his life, assisted by the practitioner) and psycho-analysis, where he reclined in a semi-conscious condition and expressed the ideas and feelings that arose in his passive mind. The aim of the treatment was to give the patient encouragement, general re-education, and rest. It was generally a matter of months, but at the end the patient had acquired an autognosis and a general philosophy of life that went far to prevent him from failing again. He did not insist that distortion of the sexual tendencies was at the root of all psychic trouble. It was responsible for a great many, but the difficulties of several patients arose from the other two instincts, those of self-preservation and the herd.

Treatment of Severe Mental Cases.

He strongly advocated segregation and isolation, with the chief object of giving the patient rest from the social duties which were often the chief cause of his trouble. Mental hospitals offered the advantages of complete rest and the "atmosphere of healing," and the knowledge that many patients recover under the treatment they receive there, but they had the drawbacks of the society of mentally afflicted people and not enough psychological treatment, especially analysis. Many cases, however, required occupation, and he mentioned a clinic in which patients practised congenial handicrafts, games, and riding. The latter was an exceptionally fine stimulus for lethargic patients. Other items of treatment were milk, massage, and mental exercises. Skill in the choice of method was the chief requirement of the psychiatrist, and was not acquired quickly, but only after long and patient experience.

Discussion.

Dr. **Ernest Jones** questioned Sir Maurice Craig's statement that there was a school of thought which offered a purely psychic explanation of all mental disorder. Just as all good exponents of the physical causes recognised the psychic aspect, so Freud, Prince, and Janet took physiology and biochemistry fully into account. He agreed with Dr. Brown on the extreme importance of early diagnosis and prognosis, which were commonly overlooked by those who relied on palliatives; these, however, did not dislocate the patient's life like definitely wrong measures. A tentative analysis of two or three weeks was extremely useful in enabling a physician to decide whether a particular long and drastic course was likely to produce good results. These treatments were like surgical operations, some were obligatory, while others could be left to the patient's own decision.

Dr. W. H. B. **Stoddart** complained of the reluctance of the public to visit practitioners of any treatment with a "psychic" name, although they would trust neurologists. He disliked hypnotism, which he said increased the disorder in neurotics and was impossible to apply to psychotics. Psycho-analysts did not profess to discover sexual perversions but to uncover sexual repressions.

Dr. C. H. **Caldicott** said that he had often given 5–10 gr. of bromide regularly for as long as a year without the slightest harmful results.

Dr. A. E. **Carver** pointed out that a large proportion of the cases described as "mental" showed psychic and physical symptoms inextricably mixed, when it was difficult to decide which should have precedence of treatment. He was strongly against treating minor physical symptoms if he could help it, as the treatment held the patient's attention and aggravated his neurosis.

Sex and Internal Secretion.

Dr. H. **Corner** described the experiments of Steinach in grafting into animals the glands of the opposite sex. His argument was that every individual has the characteristics of both sexes, and if the "hidden sex" were allowed to grow more quickly than the actual it caused very severe conflicts which led in certain people to mental disorder. This was especially frequent in children of mixed race. It was therefore important that the relative likelihood of uneven development in children of international marriages should be established by experiment and predisposed individuals given gland treatment in their early years to restore the balance between the hormones of both sexes, for when the organs of secretion became differentiated no further modification from outside was possible. He went so far as to suggest prenatal gland treatment.

Dr. J. **Glover** spoke of the application of psycho-analysis to psychoses. It had delayed the degenerative process for some years in dementia præcox and had given good results in the manic-depressive form, a biennial depression having given place in one patient to a periodical neurosis. It had no effect on paranoiacs. Its use was not, however, confined to curing, since an experienced analyst could help and improve neurotics and in graver cases prescribe, if not a treatment, at any rate an environment that would give mental patients the best chance of improvement.

Dr. G. M. **Rudolf** stated that in a batch of general paralytics treated with malaria inoculation, 60 per cent. of those discharged cured or improved had been taken within 18 months after the first symptoms had appeared, but those in whom the disease had run for over 18 months numbered only 7 per cent. of the successes.

Dr. M. D. **Eder** said he was disappointed at hearing practically nothing but the virtues of psycho-analysis; he had hoped for a duel between the respective partisans of psychic and physical treatment. He mentioned the malaria treatment of general paralysis. It was undesirable to treat physical symptoms in hysterical and obsessed patients, as these symptoms would disappear with the restoration of mental health. Psycho-analysis had given good results in psychoneuroses, but no psychotherapeutic method had been very successful in treating psychotics. Results in the manic-depressive psychosis had been fair in paranoid cases if treated early. It was worth while taking risks in exploring its possibilities in dementia præcox.

The Blood-Sugar of Adolescent Psychotics.

Dr. R. N. Craig drew attention to the value in early dementia præcox and exhaustion states of blood-sugar tests as an indication of improvement. The starvation level in exhaustion cases often fell surprisingly low, but in most cases of dementia præcox it remained within normal physiological limits. Præcox cases showed a curve of the low, flat type after the glucose meal. Intensive treatment with thyroid and calcium lactate produced a great improvement in both the mental reactions and the physical condition of patients of both disorders, with a corresponding improvement in the type of their curves. He had produced a state of confusion in two cases of early paranoia by the injection of morphia and hyoscine; this had broken up their systematised delusions, but it was too early yet to say whether the improvement was permanent. He pleaded for wider instruction both of medical students and laymen in the danger signs of nervous and mental disease. In many mental disorders, if the practitioner were summoned in time and fully recognised the symptoms, he could avert what would otherwise be a complete mental breakdown.

The President, in summing up, deprecated any distinction between the physical and the mental factors. The physical illness should be treated on its own merits, whether it were related to the psychic disturbance or not. The mental picture was usually a counterpart of the physical.

Sir Maurice Craig, in his reply, dealt with the points raised by the exponents of psycho-analysis, and dwelt especially on the impossibility of diagnosing a mental case in the early stages, especially by its psychic reactions alone, which were often due to purely toxic causes. It was not even possible to draw a sharp line between psychoneuroses and psychoses, as the milder condition might develop into the graver if not properly treated. We should not be misled by names, but should treat each case on its merits.

Dr. Brown, replying, claimed for psycho-analysis the great merit that it gives a clearer insight into the mind than any other science, and for this reason no psychiatrist could afford to neglect it. It did not necessarily make sex or the narcissistic tendency the basis of every mental reaction. Hypnotism was certainly disastrous if used unskilfully, but both Janet and himself had found it invaluable. Hypnosis and hysteria were allied mental conditions.

SECTION OF COMPARATIVE MEDICINE

A meeting of this Section was held on Oct. 28th, Prof. F. T. G. Hobday, the President, being in the chair.

The President, before calling upon Dr. Andrews for his paper, delivered a short address, in which he passed in review the work which had already been done in the domain of comparative medicine, and spoke of the large field of investigation still awaiting attack. A remarkable observation which needed light was that one species of animal was immune to a disease which was fatal to another. Why, for example, was glanders so fatal to man and the horse while it was impossible to transmit it to the ox? He maintained that collaboration between the human and the veterinary students of disease had been greatly furthered already by the establishment of this Section of Comparative Medicine, and all over Great Britain this lead had been followed, as evidenced in the united meetings in the provinces between members of the British Medical Association and members of the National Veterinary Association. Such association perceptibly helped forward the mobilisation of the forces which were used in the fight against disease.

Advances in Knowledge on Plant Poisoning.

Dr. W. H. Andrews read a paper entitled Some Recent Advances in our Knowledge of Plant Poisoning. He said some forms of poisoning by plants were important by reason of the serious economic losses involved, but of particular interest was the occurrence of strange effects, or effects produced under unusual and unexpected circumstances. In Britain it was very difficult to obtain statistics on this subject; farms and holdings were usually somewhat small, when compared with those in the Colonies, and hence the total losses sustained by any one farmer were not such as to lead him to report them to headquarters or to require an investigation to be made. In addition, in a number of cases the diagnosis was not certain, and some losses attributed to feeding on certain plants were found not be due to that cause. But in South Africa, Australia, and the United States losses were much larger, and a larger proportion of the animals there were fed on natural vegetation than was the case in the United Kingdom. A further reason was that some of the countries were subject to severe droughts, causing serious shortages of ordinary foodstuffs. Long, one of the best authorities, agreed as to the difficulty of estimating losses from this cause, but said they were numerous, and that the aggregate financial loss was very heavy.

The present state of knowledge on poisonous plants Dr. Andrews considered very unsatisfactory; many plants were reputed poisonous which were not poisonous at all, while in a number of cases in which poisoning was attributed to a certain plant, it was founded on assumption, which was not borne out by careful investigation. Prof. A. J. Ewart, writing of the poisonous plants of Victoria, said it was common, when faced with a sudden outbreak of disease among animals, to incriminate some plant which grew in abundance in the vicinity. In County Dublin, Craig and Keir found that a certain disease appeared among animals in the spring and autumn, and many features suggested that the cause might be plant poisoning. There seemed reason to suspect a particular plant, a sorrel. Chemical analysis at first appeared to strengthen the suspicion, as it contained an oxalate in considerable amount. But Craig and Keir went a stage further and fed the sorrel to cattle; one bull consumed 269 lb. of it, and at no time did it, or the other cattle to which it had been given, show any ill-effects. Many plants, however, caused bad effects without having been suspected of doing so. Another source of error lay in the changes which occurred in the actual plant material, and but little was known on this. In many cases in which an apparently harmless material had produced illness, there was reason to believe the plant substance had undergone fermentative changes; some cases of illness had followed feeding with new-mown hay, and it had not yet been worked out whether the symptoms were due to an invasion of the hay by parasitic or saprophytic organisms. The latter might not cause any difference to the naked-eye appearance of the plant. A further possibility was the admixture of the plant material with material from some other source. Lathyrism in the human subject was well recognised in some Eastern countries, but evidence in regard to the amount required and the time necessary for the effects to develop had been conflicting. It had now been shown that the pure lathyrous grain did not contain any alkaloid of a harmful nature, and that to a number of kinds of animal it could be fed without harmful effects following. But cropped lathyrus was usually mixed with many weeds, and some of the latter gave rise to seeds which closely resembled lathyrous grains, such as a very common vetch containing a harmful principle. In a number of botanical species were included plants not quite similar morphologically, and probably differing considerably in chemical composition. Plants might vary in toxicity according to the soil in which they were grown, and differences were also observed in connexion with the season and the stage of development of the plant itself. Many plants were eaten only at a particular season of the year—i.e., when other products were very scarce. Dodd found, in Australia, a particular dermatitis in sheep due to skin sensitisation following exposure to the sun's rays, the rash occurring only on those areas of skin which were unpigmented. There had not been much work done on the changes in plants due to the presence of fungi in them. Mitchell, in Natal, worked at a particular condition in cattle associated with nervous symptoms, and he found the illness to be due to ingestion of harmless grasses which were mixed with an ergot-like plant. Lathyrism was found to have a definite incubation period, but little was yet known of the active principles responsible for the production of the condition. High fever was sometimes a symptom of plant poisoning; some animals developed a temperature, from this cause, of 107° or even 109° F. Marsh mallow fed to sheep caused bad symptoms in them, but not in horses and cattle. Chronic plant poisoning, he felt sure, was very frequent, and caused serious losses of stock. In some animals a certain time was needed after the feeding to develop symptoms; in one series the incubation period was 80 days. In domestic animals lathyrism showed a latent period whose length was about 54 days. In some cases the poisoning effects became manifest in a sudden explosive way; it might be that this synchronised with the breaking down of the liver cells in which the poison was harboured until then. When confronted with a disease which seemed like broncho-pneumonia, plant poisoning was not likely to be suspected, and even if suspected it might be difficult of proof. It was not easy to pick out the plant suspected, and when the symptoms developed the animal might have been taken some distance away from it. And there was much yet to learn as to why animals ate poisonous plants; hunger, especially in countries where droughts occurred, and the condition of the soil were among the factors. Animals which had been travelling were apt to be too hungry to exercise caution in the selection of their food.

Need for Biological Investigation.

Dr. Andrews said there was a real necessity for biological investigation in the first place—i.e., careful inquiry as to the effects of plants when fed to animals under their natural conditions, and the chemical and pharmacological investigation should only follow where biological inquiry showed the necessity of it. This would prevent much waste of laboratory effort and ability.

As to methods of prevention, the obvious method was to eradicate the offending plant, but that was a counsel of perfection, and in many instances it was economically if not practically impossible. Moreover, the property which made plants dangerous at certain periods was a valuable one at other times. More exact knowledge would enable advice to be given as to what stock must be kept off particular foods at certain periods. A further matter was that of dilution of foods which were poisonous when taken largely, so that no harm resulted. Symptoms in some instances only ensued after long-continued feeding on the offending plant, and in such cases the animals might be turned loose on such pasture only one or two days a week.

Discussion.

Prof. A. J. **Clark** said the question of the delayed action of poisonous plants was a very interesting one to him, and instructive parallels were afforded by ordinary pharmacological drugs. One kind of delayed action was that in which a particular drug would only produce a certain amount of action on a tissue for a particular time, and in order to cause a toxic effect it had to be repeated a number of times. Perhaps the best example of that was thyroxin. One dose of this, in any quantity, given to an animal caused no discomfort, but if this quantity were divided and given as several doses poisonous effects would follow. The determining factor in such instances seemed to be the length of time it was acting rather than the size of the dose. Examples were also found in metallic poisons, such as mercury diethyl. A dog was given some of this subcutaneously, and a month later no toxic effects had been observed, but two or three days later the dog became blind, and a week afterwards died of acute mania. Some arsenical poisons caused the same kind of effect, such as atoxyl, which could produce blindness long after it had been taken. He believed that people who worked in munition factories during the war were still dying from the late effects of T.N.T. on the liver cells. Similarly, lead poisoning, by its action on the arteries, might produce a cerebral attack at a remote date. He fully agreed that chemical investigations should be carried out only on those plants which biological inquiries had rendered suspect.

Dr. P. H. **Manson-Bahr** said there were a number of mysterious diseases in the tropics which so far had proved inexplicable on a parasitological basis. In India there was a cirrhosis of the liver which was very common, especially among Mohammedans, who did not take alcoholic drinks. Food might supply the explanation, as Dr. Andrews had said that cirrhosis of the liver in cattle could be induced by giving them a particular diet. A similar remark applied to the infantile cirrhosis among suckling infants in India, which occurred especially when children were born with the minimum interval between. In the case of pellagra, the rash appeared on surfaces which were exposed, so that the free areas of skin coincided with the parts of the body covered by the clothing. It seemed to be due, as in the case of the animals mentioned by Dr. Andrews, to the skin in the exposed areas being in a hypersensitive state.

Swine Erysipelas in the Human Subject.

Captain **Stowe**, in veterinary practice at Redhill, attended to show lesions of swine fever on his thumb and palm which he acquired in carrying out a post-mortem examination on a black pig which died from the disease. During the examination he made a small wound on his thumb, washed his hands in disinfectant at the conclusion, and then applied iodine. On the following evening there was a slight swelling at the wound and some inflammation. He applied lint soaked in 2½ per cent. carbolic and wore a rubber stall, and next morning the lesion had disappeared. Five days later a fresh lesion occurred on another part of the thumb. This continued to spread and fresh sites to occur until painted twice daily with 2 per cent. picric acid. The pig had a very virulent attack of the disease.

SOCIETY OF MEDICAL OFFICERS OF HEALTH.

FEVER HOSPITALS MEDICAL SERVICE GROUP.

A meeting of this group was held at the Society's house in London on Oct. 23rd, Dr. F. H. **Thomson**, the President, occupying the chair.

In the absence of Dr. E. H. R. **Harries** (medical superintendent, Birmingham City Hospitals) Dr. W. M. **MacFarlane** read his paper on the

SERUM TREATMENT OF SCARLET FEVER.

The speaker said that it was necessary to consider to what extent the results of serum treatment were due to (*a*) the serum itself—i.e., non-specific protein therapy; (*b*) specific antibacterial properties; or (*c*) specific antitoxic properties. It was difficult to estimate and especially to present graphically the results of any one form of treatment in scarlet fever, or to compare the results obtained by one means with those obtained by other means. After analysing some 1500 recent scarlet fever case-sheets and charts he could produce practically identical charts of similar clinical types of case which had had (*a*) no serum at all, the treatment being purely symptomatic; (*b*) normal horse serum; (*c*) diphtheria antitoxin, for the sake of its recent horse serum; (*d*) polyvalent antistreptococcal serum; and (*e*) specific scarlet fever antitoxic serum. Clinicians knew, however, that there were some signs and symptoms far too subtle to be amenable to a charting process. The estimate of any form of treatment except in the most general terms of success, partial success, or failure must ever remain one for personal judgment, and would, of course, largely be influenced by the type of clinical material available for its trial. In a disease which varied so greatly in severity and in type in different countries—and even in different parts of the same country—at the same time, and in the same country at different times, it was almost futile to attempt statistical comparison between the results obtained by individual workers employing the same therapy until very large numbers were available for analysis. He proposed briefly to discuss serum treatment in scarlet fever from three standpoints.

Non-specific Protein Therapy.—Quite recently Pontano had stated that he "has found that the serum of convalescents from scarlet fever, the serum of normal individuals, and normal horse serum are equally efficacious when injected intravenously. The mechanism of all three serums appears to be identical as far as can be judged from the effects." Claims had been advanced for the superior value of normal horse serum over antitoxin in diphtheria, but not many would be prepared to accept them. In a number of cases of scarlet fever of definite septic type he had given either normal horse serum or diphtheria antitoxin in doses of not less than 50 c.cm. intramuscularly, and had observed definite improvement, as shown by cessation of rhinorrhœa, diminution of adenitis, and progressive fall in temperature. But there were, of course, many cases of septic scarlet fever in which improvement in the septic process had followed purely symptomatic treatment.

Specific Antibacterial Serum Therapy.—Belief in the importance of the part played by streptococci in scarlet fever was, said Dr. Harries, no new thing. Klein had described a *Streptococcus scarlatinæ* in 1886. The earlier sera, in intent at any rate, had been primarily antibacterial and were produced from polyvalent strains of streptococci. The earliest produced by Marmorek (1895) had been a failure and others of similar type had followed it into limbo. Certain of the later productions of polyvalent antistreptococcal serum had, however, been employed with a measure of success in the strictly septic type of case when directed definitely against the septic manifestations. Claude Ker, in 1920, had held that the view that scarlet fever was primarily a streptococcal infection was one which was "being more and more discredited by modern research." Nobody had done more to investigate modern work in scarlet fever than Ker, and he had fully appreciated the significance of the discovery of the Dicks; of the bacterial sera, however, he had, on the whole, a poor opinion. Ker had later been one of the earliest to show that some of these sera presented either no antitoxic titre at all or so little that they would not produce a Schultz-Charlton reaction, the true nature of which—a toxin-antitoxin phenomenon—was first elucidated by Mair. Dr. Harries's own experience of polyvalent antistreptococcal sera had been fairly extensive. Although he was unable to recall any result approaching the "miraculous," yet he was sure that, given early and in sufficient dosage, the polyvalent antistreptococcal sera had frequently, but by no means always, had a favourable and sometimes a strikingly favourable effect upon the septic process. Given when this was well established or at any stage in inadequate dosage —nothing less than 50 c.cm. to 100 c.cm. intramuscularly was of value—they were practically useless. Such sera had no appreciable effect upon the primary manifestations of toxæmia.

Specific Antitoxic Sera.—In a series of 37 cases of scarlet fever Birkhaug had found that intramuscular injections of 15 to 85 c.cm. of serum from convalescent cases of scarlet fever caused a rapid improvement in the general symptoms, but practical difficulties made this method of treatment one of only exceptional application. Dr. Harries's own experience of convalescent sera given therapeutically was limited to two or three cases, and in these the results were inappreciable, owing (almost certainly) to the dose being too small. Zingher and others had employed citrated whole-blood from convalescents. One of the earliest sera which possessed definite antitoxic properties was Moser's (1902). Although still apparently employed on the continent, Moser's serum had fallen into disrepute, not because it was of no value, but because it produced very severe serum sickness. Dochez's was the type of the new sera obtained from horses immunised with the specific hæmolytic streptococci of the Dicks. More recently sera had been produced in America and in this country by immunising horses either with specific hæmolytic streptococci or with the specific toxin—the latter, of course, producing pure antitoxic sera. The Dicks claimed for scarlet fever antitoxic serum that "if given early in the disease there is a definite fading of the rash in 24 hours and improvement in the toxic symptoms. Antitoxin removes the toxic element and the subsequent course depends upon local infection of the nose and throat. After enough antitoxin has been given to relieve the patient of the necessity for combating toxæmia these local complications should receive careful attention."

Dr. Harries said that his experience and that of his colleagues with antitoxic sera had been entirely gained from about the beginning of this year with sera produced in the Wellcome Physiological Research Laboratories. Until a very much larger number of cases had been treated, and, moreover, a larger proportion of cases of great severity, their experiences could not be recorded as anything more definite than impressions. The type of case treated had varied from the moderately severe to the very severe. The first few cases had been treated with 20 c.cm. to 30 c.cm., and this dose was too small for a case sufficiently bad to merit serum treatment at all. Later cases had a minimum dose of 40 c.cm. intramuscularly. The largest total dose so far given was 70 c.cm. in two portions, and probably more marked and rapid improvement would have been seen in some cases had doses of 100 c.cm. or possibly more been given. In some cases serum had been given when toxæmia was well established; in others it had been intentionally withheld until some particular manifestation occurred in order to judge of the effect, if any, of serum treatment directed to that particular point.

Dr. Harries then summarised his tentative conclusions: (1) Reduction of pyrexia. On the whole pyrexia is reduced more rapidly by serum. With reduction in pyrexia tachycardia is also reduced. (2) Blanching of the rash. This is sometimes strikingly seen in 12 hours after injection, even with so little as 20 c.cm. of serum, but such rapid blanching of the rash only occurs in the earliest rashes—that is to say, in rashes less than 24 hours old. When the rash is more than three days old no appreciable blanching effect is produced, owing no doubt to toxin fixation in the tissues. Coincident with the fading of the exanthem has been the effect upon the enanthem. The engorgement of the fauces has rapidly improved and with this early rhinitis has ceased, this doubtless being due to the lessening of the inflammatory conditions of the fauces. The rash, however, is but an unreliable index of toxæmia. The hypertoxic case has, as a rule, a characteristically poor rash, and in estimates of the result of treatment too much attention need not be paid to what happens to the rash; a plentiful distribution of the toxin into the cutaneous tissues probably acts as a safety-valve. (3) Nervous manifestations. The toxin of scarlet fever is apparently an excitant of nervous tissues in contra-distinction to that of diphtheria, which is a depressant. It is upon the nervous manifestations that some of the most striking results following the injection of scarlet antitoxic serum are seen. Patients with severe delirium have in less than 12 hours become perfectly rational, and have been able to express themselves how much better they felt. (4) Septic complications. There is no rapid improvement in established septic conditions following the administration of antitoxic serum. (5) Late complications. Although the series was small and therefore no statement of any value can be made, there were no late complications in the cases treated with antitoxic sera—i.e., there was no instance of nephritis or carditis. (6) Serum sickness. This occurred in practically every instance and in the case of one batch of serum proved of exceptional severity; indeed, in one or two instances the serum sickness was quite as severe as the original attack of scarlet fever. Concentration of serum will perhaps reduce considerably the incidence of serum sickness.

Dr. Harries stated his belief that good scarlet fever antitoxic sera would do exactly what the Dicks had claimed and no more—that is to say, "remove the toxic element, and by relieving the patient of the necessity for combating toxæmia give him a much better chance to overcome septic manifestations." He discussed the practical difficulties of estimating antitoxic titre arising in the three methods used—namely, blanching of rash, passive immunisation of a Dick positive reactor, and neutralisation of toxin by antitoxin, as shown by performing a Dick test with a mixture upon a known susceptible person and obtaining a negative result. He concluded by referring to the views of R. W. Pryer, who, writing in the October issue of the *American Journal of Public Health*, stresses the importance of the presence or absence of a lytic principle in serum, and states that—

> "a serum (even an ordinary diphtheria antitoxin) which contains a high quantity of this principle will give a positive rash fading or Schultz-Charlton reaction. A non-lytic serum will not. *Streptococcus scarlatinæ* toxin is neutralised by a lytic serum. It is probable that the therapeutic value of a convalescent serum is partially due to this principle. . . . The serum of a horse may be strongly lytic at one bleeding and practically devoid of this property at another time. . . . There is the possibility that the serum of a horse, irrespective of its treatment, if obtained during the period of maximum lytic activity, will differ in its effect on scarlet fever from a serum obtained during the periods in which lytic principle is absent. Therefore it would be well, perhaps, to go cautiously in predicting that any methods of serum production will always give a satisfactory serum for use in the treatment of scarlet fever."

Apart from the above statements about lytic principle, said Dr. Harries, Pryer concluded that the mutation of bacteria is of common occurrence, and that scarlet fever is caused by a group of closely related organisms capable of intermutation by means of varying strength of bacteriophage-like principles. If these findings were borne out by subsequent work, they would go far to explain some of the difficulties and discrepancies encountered in work on the Dick toxin, the Schultz-Charlton phenomenon, and curative sera of any type.

Discussion.

The PRESIDENT said that he had treated 71 hospital cases with antiscarlatinal serum injected into the vastus externus. Of these, 31 were treated on the first day of the rash, 33 on the second day, and the remainder later. The average duration of the rash was shorter in the cases treated on the first day than it was in those treated on the second, and in 13 of the 31 first-day cases the rash disappeared within two days, whereas it did so in only 3 of the 33 cases treated on the second day. Of the 71 cases two were severe attacks of septic scarlet fever, and there were two severe initial attacks; the rapid recovery of the latter was remarkable. On the average the temperature fell somewhat more rapidly and became normal somewhat earlier in serum-treated cases, and complications were somewhat more frequent in cases treated on the second day of the rash than in those treated on the first. In the series of 71 cases 63 per cent. suffered from serum rashes and 25 per cent. from joint pains. There were no deaths. In dealing, as at present, with a mild type of scarlet fever, it was difficult, said the President, to estimate the true value of the serum treatment, but the more rapid fading of the rash with serum treatment seemed to be important.

Dr. DOUGLAS MCCLEAN stated that he had Dick tested nurses and children in the wards at the Hospital for Sick Children, Great Ormond-street, and that serum had been given to those who had positive reactions. The dose had been 5 c.cm. at first, but that had not always produced a Dick negative, and the dose had therefore been increased to 10 c.cm. As regards the protection of the children, the results had not been conclusive.

Dr. G. A. BACK (London Fever Hospital) said that he had treated some 30 cases with serum, but it was difficult to estimate the effects of treatment, particularly in view of the mildness of the scarlet fever prevalent.

Dr. E. W. GOODALL (N.W. Hospital, M.A.B.) also remarked that the difficulty was to find any bad cases; amongst the last 300 cases of scarlet fever admitted to his hospital there had not been a single death. In the few cases that he had treated with serum recovery had certainly been more rapid than he would have expected, but those cases could not be looked upon as severe, and in the ordinary way they would have got well without serum treatment. In the cases referred to the dosage had been 30 to 40 c.cm., and sometimes more, and in only one of them had there been an attack of serum sickness, and that had not been worse than what might occur with injection of antidiphtheria serum. Dr. Goodall suggested that it would be better to use the word "refined" instead of "concentrated," as applied to various sera, as he understood that the process aimed at getting rid of the superfluous proteins.

Dr. R. A. O'BRIEN (Director of the Wellcome Physiological Research Laboratories) said that it was necessary to define what sera were, and to find a method of deciding whether a serum was good or bad. There was practically no laboratory test of any value yet discovered, but hope had not been given up. The American method of testing by obtaining passive immunisation of a Dick positive reactor gave results which were very difficult to interpret. It was very difficult to provide serum which was of undoubted high antitoxic value, and it would be unfortunate if improper claims were made for the serum treatment of scarlet fever; unreadiness to draw conclusions before an adequate number of cases had been treated was to be encouraged. There would be no trouble in getting unlimited supplies of serum once it was known to have a definite antitoxic value. The sera of his firm had passed the American standard. The fact that cases of mild scarlet fever treated with serum had suffered more from the serum pains and rash than from the disease itself was an objection to its use in such cases. The passive immunisation test was undoubtedly the best available, but it must be considered whether or not the exposure of people to test the antitoxic value of serum was legitimate. Dr. O'Brien quoted figures supporting the view that complications were less common in cases treated with serum. With regard to Pryer's paper on the lytic method of testing, he withheld his opinion.

Dr. BACK said that a certain amount of delay was entailed by the use of the Schultz-Charlton test, but the majority of patients would receive their curative dose within 24 hours. The shortest period had been four hours.

Dr. A. E. A. PEARSON (Leeds City Hospital) stated that he had used the serum in a small number of cases and had noticed that the temperature had fallen in from 12 to 24 hours in nearly every instance. He had used 10, 20, and 30 c.cm. doses, but expense could not be overlooked. The cost of the American serum he had procured had been 25*s*. per 10 c.cm., so that doses of 80 or 90 c.cm. would involve a heavy expenditure. He urged the need for a standardised antitoxin, and expressed the hope that it would be a practical proposition in time.

The PRESIDENT said that at the N.E. Hospital they had been increasing the dosage, and in the last few cases had given usually 60, 80, 100, and even 120 c.cm., but there was no clear evidence that the large dosage produced any better effect than the small ones.

CARDIFF MEDICAL SOCIETY.

THE first meeting of the session of this Society was held on Oct. 13th, when Dr. R. CAMERON delivered his presidential address on Some Aspects of Gastric Function in Relation to Symptoms. Taking Ryle's classifications of dyspepsias as a basis, he reviewed the functional and organic disorders, emphasised the similarity of subjective symptoms arising from both, and compared the prevailing views on the motor, secretory, and sensory functions with those which have hitherto been taught. He reviewed the work of Carlson on hunger and appetite and pointed out that the factors producing normal sensations may, when exaggerated, lead to those conscious responses which are recognised as subjective symptoms. Dr. Cameron discussed Hurst's important contributions to this subject, which disproved any sensory response of the mucous gastric membrane to varying stimuli, demonstrated reflex hypertonus in response to local and distal irritation, and established this as a cause of delayed pain. The researches of Bennett and Ryle on fractional gastric analysis were dealt with to show that extreme variations of acidity occur without any gastric symptoms being evident and apparently without any disturbance of metabolism. In a series of mental patients without any gastric symptoms which Dr. Cameron had examined, a number showed achlorhydria or hyperchlorhydria. The conclusion drawn from recent work on gastric function in health and disease was that normal sensations result from tonus and tension of the muscle, and that subjective symptoms are most easily explained on a similar basis.

SHEFFIELD MEDICO-CHIRURGICAL SOCIETY.

AT a meeting of this Society held on Oct. 22nd Mr. H. BLACOW YATES read a paper on

Acute Osteomyelitis

based on 38 cases treated in the Sheffield Royal Hospital during the past five years. In 70 per cent. of them there was a history of a recent accident, and the majority presented a focus of staphylococcal infection at the time of admission to hospital. The pathological lesion insisted upon was metaphyseal hæmatoma, the result of trauma, which became infected by staphylococci circulating in the child's blood, though the presence of these staphylococci had produced no previous symptom. In considering the diagnosis remember the rarity of acute articular rheumatism in children under 15 years. Of six cases of acute osteomyelitis having more than one lesion at the time of admission to hospital, two showed infection of three bones and in the remainder two bones were involved. The bones affected were often on opposite sides of the body. Four of these cases recovered, two of which had a positive blood culture. Mr. Yates urged the necessity of opening the medullary cavity when external appearances were normal and discussed the factors contributing to the 18 per cent. mortality.

Mr. R. ST. LEGER BROCKMAN read a paper on

Obstruction of the Small Intestine

without reference to strangulation. He discussed the reasons why kinks were not removed in the intestine, as they are in a garden hose, by the pressure of the contents. The rapidly increasing stimuli caused a state of tetanus or spasm in the musculature of the small intestine, and as this tissue became fatigued another phenomenon of plain muscle appeared, the so-called idio-muscular contraction, which remained localised and showed no tendency to move on. The retraction ring observed in cases of obstructed labour was the best example of this condition. In all cases of obstruction there were two factors at work: the first physical, the second physiological. The increasing content of the bowel and bacterial invasion inaugurated a vicious circle, and often resulted in a partial volvulus of the small intestine. The really important thing to be considered was early diagnosis. Acute spasmodic abdominal pain, vomiting, and shock were the earliest signs and symptoms of acute obstruction. Under these conditions the only safe course to adopt was to assume the presence of obstruction until the opposite was proven. The most valuable means of diagnosis was the stethoscope. The peculiar musical tinkle of air and fluid in wearied intestine was a distinctive sound, never to be forgotten when once recognised. It could be heard at a very early stage through the abdominal wall and could often be elicited by the same manœuvre as that used to obtain a gastric succussion splash. Obstruction of the small gut demanded the surgery of the fingers rather than of the hands, and the operation should be done through as small an incision as possible. To obtain this ideal the most painstaking efforts at locating the site of obstruction were called for. The careful use of the stethoscope, and the position in which the spasm of pain fell off, or what might be called "the march of the pain," were valuable evidence in this search. Surgery in early cases should aim at simply relieving the obstruction; in later cases, where an advanced degree of distension and toxæmia were present, enterostomy should be done. Circumstances alone would decide whether this should be external, or internal into the transverse colon. Mr. Brockman observed that after the actual obstruction had been relieved, the practice of emptying the intestine by means of Moynihan's tube was most useful in some cases of extreme distension. It was essential to remember that the tube should be introduced through healthy intestine below the site of constriction.

In the discussion that followed the papers Prof. A. M. CONNELL, Mr. ERNEST FINCH, Mr. GARRICK WILSON, and Mr. ARCHIBALD CUFF took part.

PATHOLOGICAL SOCIETY OF MANCHESTER.

AT a meeting of this Society held on Oct. 21st, Prof. E. D. TELFORD being in the chair, Dr. C. P. LAPAGE read a paper on

Diathesis in Children.

Diathesis, he said, is not acquired, it is an inherited peculiarity of constitution which cannot be eradicated though it may become quiescent. An acquired condition such as rickets is not diathesis because such a state can be cured and is not a lifelong condition. Diathesis is a state of the human organism in which there is an inherited peculiarity of constitution so that the individual tends to exhibit either certain reactions in response to irritating factors or certain weakness of resistance. It is familial rather than racial or national. Dr. Lapage went on to deal specially with two diatheses, the exudative and the nervous. The exudative diathesis is an important factor in determining the reaction of children to disease and to faulty metabolism. Asthma, eczema, hay fever, and angio-neurotic œdema are the well-known signs, but curd-dyspepsia, milk-intolerance, urticaria, and croup are common in infants of this diathesis and in later childhood. In addition there may be cyclical vomiting, mucous colitis, and other signs very similar to gout in adults. Children of exudative diathesis are of a pale lymphatic type and are restless and irritable. Irritants are concerned in the production of signs of the diathesis; the individual is exudative and may be sensitised. External irritants are: (1) Foreign proteins derived from animals or from plants, food, or bacteria; (2) metabolic faults from animal fats, acids, fruits, wholemeals; (3) climatic factors from bracing seaside places and east winds. Internal irritants are from infections of the respiratory, digestive, or other systems, and also from infected lymphatic glands. In the nervous diathesis the child has a weak spot in the reactions of the nervous system, and as a result of infection or overstrain may show disturbed nervous reactions, tachycardia, irritability, moodiness, various phobias, night terrors, and even fits may occur. Babies with pyloric spasm are of the nervy type, and some babies who find great difficulty in feeding do so because they are nervous. Genuine hysteria may be present in infants.

Reviews and Notices of Books.

The Pathology of Tumours.

Second edition. By E. H. Kettle, M.D., B.S. Lond., Professor of Pathology and Bacteriology, Welsh National School of Medicine, Cardiff. London: H. K. Lewis and Co. 1925. Pp. 285. 12*s.* 6*d.*

There are two ways of looking at tumours. They can be regarded as purely adventitious and possibly avoidable formations, as "purposeless" pests, the sole discoverable object of which is to prevent overcrowding of our globe. There is a second and more scientific light in which tumours can be regarded—namely, as variations or anomalies of growth, comparable with other departures from the "normal" standard, to which practically every cell in the body which has not ceased to perform its physiological functions is liable. Viewed in this light the problems of tumour formation are susceptible of study upon general biological lines. A beginning has been made in this direction, but the teaching on the subject lags behind the advances which have been made. Prof. Kettle is one of the few pathologists in this country who are qualified to improve the teaching, and he is to be congratulated upon the way in which he has faced and overcome the difficulties. The second edition of his "Pathology of Tumours" is a model of conciseness and deserves to be ranked with Kaufmann's "Lehrbuch." It has been thoroughly brought up to date, and chapters have been considerably altered, if not rewritten. The student who, after reading it, fails in the higher examinations must not blame this book. The chapter upon the Experimental Study of Cancer is invaluable for everyone who has been unable to keep in touch with the latest developments. If we regret an omission in the book, it is that full references are not given to all the writers quoted in the text.

Possibly because he is writing a text-book intended primarily for students, Prof. Kettle seems to us to under-estimate the variability of tumours, a feature that they share with all living tissues. In the chapter upon the basal-celled carcinomata (in which, by the way, he is not quite just to Krompecher when he suggests that they were so named in the belief that they alone—and not all the cutaneous carcinomata—arise in the basal cells of the epidermis, which alone retain the function of division) he discusses the possible origin of rodent ulcers in hair follicles or sweat glands. But it is a well-established fact that these structures share in the epidermisation of scars. Then why should not a tumour that originates in epidermal cells mimic the minute and really insignificant structural differences that arise during the natural development of the skin and its appendages, regardless of its exact site of origin? Another question which might be asked is this, Are not keratinisation and the production of "colloid" expressions of functional zeal on the part of a tumour, however misguided it be, since they correspond with physiological differentiations? They can hardly be regarded as degenerations. Morphologists may also question the importance the author attaches to the endotheliomata. We agree that the name has been much abused in the past. It could with advantage be discarded and replaced by "angioma," "angiosarcoma," and so forth. Why label a salivary tumour "endo-thelioma" when Prof. Kettle tells us that "it is now pretty well agreed that it is derived from epithelium"? These and similar difficulties would be largely overcome by adopting Albrecht's teaching and frankly admitting that *all* tumours are malformations, and that, although the majority of them are well-defined species, many cannot be separated from hyperplasias and other anomalies of growth.

The book is well got up. The illustrations are good, especially the histological drawings, which we believe are the work of Prof. Kettle's own hand. The present edition is a worthy successor of the first, and will occupy a sure place among books of reference.

Urology.

The Radiological Examination of the Male Urethra. By G. L. S. Kohnstam and E. H. P. Cave. London: Baillière, Tindall and Cox. 1925. Pp. 115. 15*s.*

In this work the authors give the results of their method of investigating the urethra, which has been used for the last five years, but has not yet found general favour amongst urologists. This has been due partly to the fact that urethroscopy and cystoscopy give such accurate information that other methods are, as a rule, unnecessary, and partly to the difficulty of acquiring a reliable technique and interpreting accurately the urethrograms obtained. This book gives a full description of a satisfactory method of injecting the urethra, and, by supplying a large number of interesting plates, gives the reader an opportunity of learning what facts may be deduced from urethrograms. The opaque fluid employed by the authors is lipiodol, diluted with four volumes of sterile paraffin, and it is injected under a constant pressure recorded by a mercury manometer. Radiograms are then taken under different conditions—between injections, during injections, and with the bladder constricted or relaxed. Full details are given concerning the best positions, both of the patient and of the radiographic apparatus. The second section of the book deals with the interpretation of negatives. The conditions in which the authors consider a radiological examination of the urethra of the greatest use are stricture, prostatic enlargement, and obstruction following prostatectomy. It is interesting to note that as a result of their investigations they have come to the conclusion that the sphincter action after prostatectomy is undertaken not by the compressor urethræ muscle, but by a portion of prostatic urethra that has been left behind.

Although it is unlikely that radiological examinations of the urethra after distension with an opaque fluid will ever take the important place in urology that pyelography has done, it must be admitted after reading this work that the method may be of considerable use in special cases. Thus, in old-standing strictures, in which treatment by excision is under review, a urethrogram will furnish valuable knowledge prior to operation as to the amount of urethra that it will be necessary to excise in order to obtain a satisfactory result. The authors are to be congratulated on their addition to our knowledge of radiography of the urethra and on having presented the results of their investigations in a readable and easily assimilated form. Their book should certainly be found on the shelves of all specialists in genito-urinary troubles.

Empyema.

Some Fundamental Considerations in the Treatment of Empyema Thoracis. By Evarts A. Graham, A.B., M.D., Member of Empyema Commission, U.S. Army; Professor of Surgery, Washington University School of Medicine. London: Henry Kimpton. 1925. Pp. 110. 10*s.* 6*d.*

Prof. Graham's essay was written in 1920, and the delay before publication has given him a chance to criticise in an addendum articles upon the same subject which have appeared in the meantime.

No attempt has been made to cover the subject of empyema as a whole, and the author founds a therapeutic procedure on general principles. Prof. Graham states that the mortality-rate of streptococcal pneumonia associated with empyema in certain military camps during the influenza pandemic was actually above 70 per cent. By the adoption of the cardinal principles discussed in the essay the mortality was reduced to 4·3 per cent. The essential features of these principles are three: (1) careful avoidance of an open pneumothorax in the acute stage; (2) the prevention of a chronic empyema by the rapid sterilisation and obliteration of the infected cavity; and (3) careful attention to the nutrition of the patient. It is with the first of these principles that the greater bulk of the author's treatise is concerned. His insistence upon its importance is founded on observations of the experimental production of pneumothorax which prove that previous conceptions of its mechanics are incorrect. It is often thought that the two pleural cavities are kept rigidly exclusive by the mediastinum. But the latter opposes only a very slight resistance to pressure unless it is previously diseased and thickened by long-standing inflammation. An open pneumothorax on one side, therefore, leads to compression of *both* lungs. A lung does not necessarily become collapsed and functionless even if the pleural opening is larger than the diameter of the glottis, and a bilateral open pneumothorax is not inevitably fatal as it would be, of course, if collapse of both lungs were to ensue. The maximum opening into a pleural cavity that can be safely undertaken depends upon the relation between the amount of air entering the lungs and the amount which enters the pleural cavity. Any condition which reduces the "vital capacity" or increases the demand for oxygen will diminish the size of the opening compatible with life.

During the pre-critical stage of pneumonia the amount of air entering the lungs is for several reasons diminished. Later, with a relatively higher vital capacity the thorax may be opened with less danger of respiratory embarrassment, as will also be the case when, through past inflammation, the mediastinum is relatively rigid. These conclusions are in accordance with clinical experience. Repeated aspirations should be substituted for operation in the pre-critical stage. If frank pus develops, operation can be done later, and is, if possible, postponed till the condition of the patient is favourable. Some years ago[1] Dr. A. Abrahams described 116 cases of empyema under his care, in 86 of which aspiration alone led to complete resolution.

The book is a little wearying by a tendency to repetition, but it is very convincing, and the conclusions will be attractive to those physicians and surgeons who have more or less empirically adopted the recommendation for which Prof. Graham supplies theoretical reasons.

AUSTRALIAN TOTEMISM.

A Psycho-analytic Study in Anthropology. By GÉZA RÓHEIM, Ph.D. With an introduction by M. D. EDER. London: George Allen and Unwin. 1925. Pp. 487. 35*s*.

THERE is a bewildering amount of material concerning the totemism of the Australian aborigines, and observers like Spencer and Gillen, who lived among the Arunta tribes of Central Australia, have made detailed records of beliefs and ceremonies which will soon be things of the past; but no theory as to the origin of these complicated systems has been generally accepted. Róheim, following Freud in his work on "Totem and Taboo," studies their psychic structure and claims to trace their evolution from the period of the supposed primitive horde in which the brothers unite to kill the father in order to secure possession of the women of the horde—the primeval Œdipus situation. Granting that this situation exists as an unconscious fantasy that can be revealed by individual psycho-analysis, it still seems a far cry to the postulation of a stage in human development in which it was an actuality. If we grant that, and a good deal more of psycho-analytical theory, we may follow Róheim's ingenious explanations of the extraordinary facts of Australian ethnology. Even then there remains a feeling that his speculation is too facile, as in the picture drawn on p. 389 of the events after the killing of the father, when the horde "would come back to stone the corpse a second time as they had stoned the man when he was alive."

Yet the application of psycho-analytical findings to explain totemism is more than a tour de force; it is a test to which these findings may be legitimately subjected, for if they indicate the workings of the primitive level of the mind then these savage customs should come into agreement with them. Such an identity Róheim claims to find throughout, a good example being the nescience of certain tribes concerning the relation between sexual intercourse and procreation. He shows that the knowledge of this relation manifests itself in beliefs and rites which express infantile sex theories already familiar in psycho-analytical work. This example is one out of many, but not all are so easy to understand. In the deductions the writer draws as to the distribution of the proto-Australians and later immigrants, he is in accord with other authorities. A more limited thesis, however, would probably have a better chance of acceptance by ethnologists. The book is a product of a close study of the literature and is provided with extensive references.

THE CONTROL OF THE BREATH.

An Elementary Manual for Singers and Speakers. By GEORGE DODDS, Mus.B. Dunelm, and JAMES DUNLOP LICKEY, M.D. London: Humphrey Milford, Oxford University Press. 1925. Pp. 65 + xii. 6*s*.

THIS little manual gives, in simple language, a clear and readable description of the structure and mode of action of the respiratory mechanism, and, though much less fully, of the production of tone in the larynx. Little is said of the mechanism by which pitch is varied, and the vexed subject of vocal registers is not mentioned. The last third of the book is devoted to breathing and vocal exercises designed to obtaining control of voice and breath. The authors rightly believe that a knowledge of the mechanisms concerned is useful and not harmful to students of singing and elocution; to such this little book, with its excellent explanatory illustrations, will be helpful.

OLD DERBY PORCELAIN AND ITS ARTISTIC WORKMEN.

By FRANK HURLBUTT. London: T. Werner Laurie, Ltd. 1925. Pp. 312. 18*s*.

THIS book is admirably printed in brown ink and with wide margins. It appears that the format was selected as an attempt to get off "the Kelmscott track," but it does not seem to require any more justification than its comeliness.

Old Derby porcelain has an interesting history which is well set out, one of the most striking points in it being that, according to the author, the Derby factory was the only early English porcelain factory which, except for a few individual pieces, produced original ceramic statuary, giving regular employment to modellers on the premises. A chapter on figure-makers for reproduction is full of detailed information of the sort that the collector of china should have whatever his favourite brand, and the same may be said for the sections dealing with the painters of the figure and flower subjects, the birds, and the fruits on old Derby porcelain. All these chapters should be read in connexion with the latter part of the book, which consists of 59 plates illustrating the beautiful art and craftsmanship of various painters. One need not be a virtuoso in any way to admire these lovely little pictures, and persons who have never bought a pot or a plate in their lives—to say nothing of the more elaborate pieces—must often have felt curiosity about the painters, while to collectors the precise histories will be valuable and entertaining. As it is in the author's knowledge that many of our profession fall into this category, we do them a service in bringing this volume to their attention.

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[1] THE LANCET, 1920, ii., 543.

Reports and Analytical Records.

BRUSSON'S GLUTEN BREAD.

(BRUSSON, JEUNE AND CO., 311, GRAY'S INN-ROAD, W.C. 1.)

THIS preparation is sold in the form of rolls, each contained in a separate wrapper, and weighing about 1 oz. The rolls are extremely light, and consequently bulky in appearance. When analysed the following results were obtained :—

Moisture	12·5 per cent.
Ash	0·6 ,,
Fat	1·3 ,,
Protein	36·8 ,,
Starch and dextrin	42·7 ,,
Undetermined matter, fibre, &c.	6·1 ,,
	100·0
Matter soluble in cold water	12·4 per cent.

For purposes of comparison it may be noted that ordinary household bread, with a moisture adjusted to 12·5 per cent., contains 9·7 per cent. of protein and 73 per cent. of starch and dextrin. The Brusson bread is thus much richer in protein and poorer in starch and dextrin.

Formerly an almost complete absence, or at least a very marked reduction, of carbohydrates was considered an essential characteristic of a true "diabetic" food. Whilst a diminution of the carbohydrates in the diet of the diabetic is still deemed necessary, modern practice allows a somewhat more liberal use of carbohydrates than in the past, and under certain conditions some practitioners of recognised authority even permit, for a limited period, foods of high carbohydrate content, such as oatmeal, potatoes, and rice.

CLUBLAND WHITE PORT.

(T. R. PARKINGTON AND CO., LTD., 161, NEW BOND-STREET, W.1.)

When analysed this wine gave the following results :—

Present gravity	1·0161
Alcohol per cent. by volume	21
Total extractives	10·5 per cent.
Consisting of—	
Sugar	9·05 ,,
Total acidity as tartaric acid	0·36 ,,
Volatile acidity as acetic acid	0·03 ,,

These analytical figures are characteristic of a good port. The wine itself is of a "full character," well matured, soft to the palate, and with an agreeable bouquet.

(1) CIBALGIN ; (2) AGOMENSIN AND SISTOMENSIN ; (3) CORAMINE.

(CLAYTON ANILINE CO., LTD., 68½, UPPER THAMES-ST., E.C. 4.)

(1) Cibalgin presents in combination the analgesic and antipyretic properties of amidopyrin, a small dose of dial having been introduced for its sedative properties. It is, however, primarily intended as a non-narcotic analgesic. The manufacturers state that extensive pharmaceutical and clinical tests have confirmed the value of the compound as rapidly relieving pain without conducing to the formation of habit. The drug is available in the form of tablets and liquid for oral use, while ampoules are supplied for hypodermic injections.

(2) A claim was made recently, which has received support on the continent, that two active principles isolated from bovine corpora lutea may be used for the regulation of menstruation. These active principles or hormones have been termed Agomensin and Sistomensin, the first of which is recommended in cases of delayed menstruation, and the second in conditions accompanied by an over-profuse flow. Agomensin is of value in retarded menstrual flow occurring during an expected period or following a too scanty menstrual flow. Sistomensin appears from clinical results to act as a stabiliser of menstruation in cases of hyper-function, its use, therefore, being indicated in dysmenorrhœa and menorrhagia. With regard to both preparations interesting cases can be quoted from French and German medical literature, and considering the frequently obstinate nature of the symptoms to be relieved, and their prevalence in such varied associations, both drugs might well be given trial under carefully observed medical conditions.

(3) Coramine is the trade name for pyridine-β-carbonic acid diethylamide, which was the subject of an article by Prof. E. Stanton Faust published in THE LANCET of June 27th, 1925. This new synthetic chemical possesses a distinctive camphor-like action, and for many years unsuccessful attempts have been made to produce a water-soluble form of camphor having the typical therapeutic properties associated with the drug. Prof. Faust seems to have demonstrated that the action of Coramine is almost identical with that of camphor, and, indeed, superior in its action on the heart. According to him, in small doses it exhibits an effect similar to that of digitalis, while its stimulating effect extends to both the motor and sensory nervous systems. Coramine should be, therefore, indicated in such conditions as heart asthenia following infectious diseases, the appropriate renal affections, poisoning through narcotics, and asphyxia of the new born, and records of such cases and of cases of bronchial asthma and emphysema are reported where its use has been efficacious. The drug is available in the form of liquid for oral use and in ampoules for parenteral administration.

OPOIDINE.

(J. F. MACFARLAN AND CO., EDINBURGH AND LONDON.)

Towards the end of 1922 we noticed Opoidine favourably as an example of a mixture of the total alkaloids of opium in soluble form. The drug contains about 50 per cent of morphine, the remaining 50 per cent. consisting of other opium alkaloids, concerning the latter of which there is evidence that they are of value in particular directions. Messrs. J. F. Macfarlan and Co. have now introduced a solution of opoidine in combination with scopolamine in ampoules, and they have received evidence of the value of the combination, one practitioner writing in respect of the production of "twilight sleep," stating that he has obtained in a certain number of cases complete amnesia after the first dose of the combination.

CAPROKOL (HEXYL RESORCINOL B.D.H.).

(THE BRITISH DRUG HOUSES, LTD., 16–30, GRAHAM-STREET, CITY-ROAD, N. 1.)

Caprokol is a new urinary antiseptic synthetic remedy for oral administration. It was first brought to the attention of the medical profession at the annual meeting of the American Medical Association last year, when Dr. Veader Leonard, of Johns Hopkins University, gave a description of work carried on at his department of bacteriology over a series of years on the alkyl resorcinols. These are claimed to be more powerfully germicidal than any other known class of substances of equally low toxicity. Clinical reports published on the introduction of hexyl resorcinol and others since received indicate that it possesses valuable properties, in that it is chemically stable, non-toxic, and non-irritating to the urinary tract, and administrable by the mouth. The reports submitted to us go to show that Caprokol exhibits a powerful antiseptic action in high dilution in urine of any reaction, while its elimination in the urine has a local antiseptic influence. A short series of cases of urinary tract infections treated with Caprokol is published under Dr. Leonard's authority, and indicates that many obstinate cases hitherto resistant to treatment had lost their symptoms under use of the drug. Reference to the discovery and properties of hexyl resorcinol have already appeared in THE LANCET, and we comment this week in an annotation upon the results obtained by Dr. R. B. Henline through the employment of this urinary antiseptic.

Iodosal is the correct name of the "supertonic table salt" supplied by Messrs. Francis Newbery and Son and noticed in this column on Oct. 24th.

THE LANCET.

LONDON: SATURDAY, NOVEMBER 7, 1925.

STATUTORY DENTAL BENEFIT.

THOSE who have read the evidence submitted to the Royal Commission on the National Health Insurance Act, during the investigation which is now drawing to a close, must have been struck by the unanimity with which all sorts and conditions of witnesses testified to the desirability of making dental treatment a statutory benefit under an amended Act. Long before the evidence given by the various dental societies was reached, representatives of approved societies were paying generous tribute to the good which had resulted from the partial dental treatment at present given as an additional benefit, paid for to a certain limited degree out of the funds released under the first valuation, and were advocating its conversion into a statutory benefit. Many of the witnesses, indeed, were so convinced of the necessity for this that they recommended a partial pooling of their future surplus funds in order that all insured persons might benefit from the treatment. The members of the Commission, also, by their questions showed that they appreciated the desirability of extending the incidence of dental treatment over at least the whole of the present insured population. The case for making dental treatment a statutory benefit is, in fact, proved to the hilt. There remain, however, certain questions concerning which no unanimity exists—for example, the extent to which it is possible or desirable to make statutory dental benefit complete in the near future, and the manner in which such benefit as may be decided upon is to be administered. To give complete dental treatment will require, annually, a large sum of money, and if an increase in the present contribution be excluded as a possible source of supply, as indeed seems necessary in the financial state of the country, the money required can only be got by some rearrangement of the manner in which the funds obtained from the present contribution are spent. It seems evident that some such rearrangement will be made, but there are certain payments in connexion with medical treatment which have a first claim on any such funds, and it is doubtful whether what will be left when these claims are satisfied, even were it devoted entirely to the payment of the cost of dental treatment, would be sufficient. It may be assumed, therefore, that those schemes of complete dental treatment, not only for insured persons but also for their dependants, which were put forward by the dental and certain other witnesses, must be taken as ideals which cannot be realised as a result of the present inquiry, but towards the ultimate realisation of which it may be possible to take a very definite step. It is questionable whether any responsible dental authority, fully acquainted with all the circumstances of the present position, would desire to see complete dental treatment given as a statutory benefit at the present time, and it would seem from a careful reading of their evidence that the dental witnesses rather contemplate—between the realisation of such an ideal and the present chaotic condition of dental treatment as additional benefit—the prudent intermediate stage of a statutory dental benefit partial in its scope and limited in its time of application, which would afford the knowledge, not available at present, on which an effective and complete scheme of national dental treatment might be based.

There was agreement on the part of all the witnesses before the Commission that, for the present at least, payment of the dentist should be for services actually rendered on an agreed scale of fees and not by a capitation fee. One reason for this proposed difference from medical benefit is that it is quite impossible at present to estimate with any approach to exactitude the numbers of insured persons who would take advantage of dental treatment were it offered to them on terms similar to those under which medical benefit is given. Comparatively little can be learned from the experience of dental treatment as additional benefit, for there are many circumstances which tend to restrict applications on the part of insured persons for this treatment at the present time. Only members of certain approved societies fortunate enough to have surplus funds and which have adopted dental benefit are eligible. The formalities necessary in claiming the benefit and the fact that only about 25 per cent. of the dentist's fee is paid by the societies have also tended to keep down the number of persons obtaining the benefit. In one society consisting of women of a class likely to appreciate and to desire dental treatment, where every possible effort was made to bring the treatment under the notice of the members and to induce them to accept it, and where special means were available to assist those who had difficulty in finding a proportion of the fee, the claims all over the society did not exceed 12 per cent. of the membership. No dental witness contemplated a demand approaching 12 per cent. of the number of insured persons, and, indeed, were that proportion of claims to be expected, at the average expense per case which has ruled during the last five years under additional benefit, the cost of dental treatment would in the near future be prohibitive. Instead of making payment for any statutory dental benefit a first charge on the available contributions as in the case of medical benefit and making payment of the dentist by a capitation fee, the trend of the evidence given seems to point to the setting aside of a definite sum of an agreed fraction of a penny from the weekly contribution which, with the appropriate Government grant, would form a central fund or pool from which the cost of a certain definite amount of dental benefit for every insured person claiming it would be defrayed. There were various ways suggested whereby the treatment provided could be limited in accordance with the money available, as, for example, by giving free operative treatment, and, in addition, paying a proportion of the cost of any necessary dentures, the patient being left to find the remainder. Assuming a demand of 6 per cent., it was calculated that this amount of treatment would cost 3*s.* 3*d.* per annum per head of the insured population, and would leave the patient to find approximately one-third of the cost. The actuary of the British Dental Association submitted a modification of this scheme which would reduce the cost to a little below 3*s.*, an amount which would be covered by a payment of 0·58*d.* per member out of the weekly contribution with the corresponding State grant added. This approximates to the ½*d.* per week suggested by the representatives of one of the approved societies and indicates a feasible beginning. The professional evidence shows that practically everything in connexion with this matter of cost of dental treatment can be calculated with a fair degree of accuracy except the possible demand; but that is the crux of the problem, and it can only be satisfactorily solved by experiment on a large scale.

Faced with the problem of how to provide as much of a desired benefit as possible, the Commissioners naturally showed a tendency to explore what appeared to be attractive avenues of economical administration, and the relative merits of "panel" and "clinic" service took up no little time when the dental witnesses attended. Here a number of the dental witnesses showed to some disadvantage. The interests of the dental profession are undoubtedly necessary considerations, but if no more potent arguments against the establishment of whole-time dental clinics can be adduced, it is to be feared that the public interest must prevail. On the other hand, undue emphasis should not be laid on the success of such clinics where they are obviously the most suitable means which can be employed, as, for example, in the dental treatment of elementary school-children or in similar treatment at maternity and child welfare centres. These are special cases which have nothing necessarily in common with the dental treatment of adults as part of an insurance scheme. The feeling of the dental profession is at present opposed to the setting up of whole-time dental clinics. There is no certain knowledge that they would provide more efficient or economical dental treatment for the industrial classes than the 10,000 private practitioners who are able and willing to give it and who have voluntarily organised themselves for the purpose. Clinics cannot be a success unless they are established with the hearty support of the dental profession, and common sense appears to favour a continuance of the panel system in dentistry as in medicine in the immediate future. The methods of control at present applied to medical benefit could be easily duplicated or modified to suit the requirements of dental benefit. On the whole it would seem from a dispassionate review of the evidence given before the Commission that it would be a matter of legitimate surprise and regret should there not emerge in the report of the Commission a strong recommendation for the early institution of a definite measure of dental treatment as a statutory benefit under an amended Act. Without imposing further contributions on the already heavily burdened employer or employee this would soon effect such a reduction of the cost of sickness benefit as to liberate funds for the completion of the scheme.

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SUBACUTE INFECTIVE ENDOCARDITIS.

NOT much was heard of subacute infective endocarditis till the latter part of the war and since. It was known as something of a rarity, but its symptoms were not understood and its differentiation from other similar conditions was not clear. Since the war it has become a commonplace and many observers have described and attempted to explain it. This increasing prevalence might be due either to more acute diagnosis or to the fact that very large numbers of men were sifted through more or less efficient filters or to some actual ætiological relation between war conditions and the disease. This last alternative seems to receive most support, and the apparently marked decline in the prevalence of the disorder during the last two years is giving another reason for believing that the war had a large share in causing it. The condition appears to be essentially a chronic bacterial poisoning, and its fatality is due at least as much to this as to the mechanical interference with the circulation produced by the valvular lesion. Its fatality, too, is extraordinarily high; with a few doubtful exceptions every case which has been definitely diagnosed has died within a period between a few months and two or three years. An inevitably fatal issue is extremely rare in parasitic diseases, and its occurrence in subacute infective endocarditis may mean only that diagnosis has not yet advanced beyond the point of being able to recognise the beginning of the end. No form of treatment has proved of any value. Any new information about it is therefore welcome, and there is much of interest in a paper on some of its bacteriological aspects in the current number of the *Journal of Pathology and Bacteriology* by Dr. H. D. WRIGHT, who has worked at it at University College Hospital in conjunction with Sir THOMAS LEWIS and his colleagues in the cardiographic clinic, where the clinical aspects have been thoroughly investigated.

It has puzzled many people that it should be so difficult to isolate organisms from the blood in a condition which is so obviously symptomatically a mild septicæmia, especially as the heart valves are the chief—indeed the only known—focus of the non-hæmolytic streptococci which are always obtained if anything is. The proportion of positive blood cultures has varied widely with different observers. In America it has been 70 per cent. or more, though LIBMAN has noted that they are not so easy to get now as they used to be. In Germany some workers report positive cultures in almost every case, while another group get figures round about 30 per cent., which is similar to the English experience. Dr. WRIGHT addresses himself particularly to the obvious proposition that negative results are due to imperfect technique. He points out that repeated examinations of the same case practically always give the same result, either positive or negative, and that there is no difficulty in isolating streptococci over and over again from a blood in which they occur in very small numbers. He adds to this a variety of experiments on media and methods, and comes definitely to the conclusion that the failure of a reasonably competent worker to isolate the cocci means that they are not there. Turning to the question of how and where the organisms live in the body, he points out that one is here confronted with very serious technical difficulties. Patients dying from a subacute endocarditis may suffer from a terminal invasion by other organisms, and if this does not occur during life a general spread of non-hæmolytic streptococci through the blood occurs so commonly after death that it is impossible with ordinary post-mortem material to get any certain and satisfactory information about the distribution of the causative organisms in the various tissues and organs. The cocci obtained from the blood during life, and to which the patients produce antibodies, are not demonstrably different from those which may be found in the blood post mortem in about a third of random autopsies. And it follows from this that agonal and post-mortem cultures are quite unreliable.

How this obstacle is to be surmounted is not at all clear; till it is we must remain in ignorance of whether the valves are really the main location of the cocci or whether they live somewhere else without producing recognisable anatomical lesions. Histologically, cocci can be readily stained and seen in the valvular lesions in cases where blood cultures have been positive. Where they have been negative cocci are sometimes easily found microscopically, but generally a finely granular material is alone present which might well pass for degenerated organisms or their dead remains, and is so interpreted by Dr. Wright. His careful observations by no means solve the problem of the disease, but they help considerably to define it. Clinically it appears to make little difference whether a case shows septicæmia or not, though a good deal of fever is more often associated with a positive blood culture than not. The cocci seem to live in the recesses of the fibrosing thrombi on the heart valves whence something or somethings emerge which stimulate the production of specific antibodies and kill the patient. Mair has produced an apparently analogous state in rabbits with pneumococci, and it is perhaps along experimental lines that the solution is to be expected. Meanwhile, it is satisfactory to note a diminution in the prevalence of a disease in which therapy is helpless.

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THE CAMERON PRIZE LECTURES.

The third of the Cameron Prize Lectures is published in our columns to-day, completing an interesting series dealing with various conditions in relation to brain surgery. The lectures were prefaced on their delivery by a brief statement from the orator, Prof. Harvey Cushing, in which he pointed out that everyday symptomatic treatment of patients was, at least in the American medical schools, neglected in the curriculum, the expansion of scientific methods having somewhat crowded the art of medicine to the back of the stage. Prof. Cushing acknowledged the fascination of modern laboratory procedures for both the teacher and the taught; they lead to diagnosis and indicate treatment along the right lines of progression, but for many of the pathological conditions thus exactly discovered there is as yet no specific remedy, and we shall all agree with him in his suggestion that "more emphasis is laid in our schools on the methods of finding out what is wrong than on what should be done for it when it happens to be found." This was, presumably, the exact frame of mind which Dr. Andrew Robertson Cameron, of Richmond, New South Wales, was displaying when he founded the Cameron Prize in 1878 with a bequest of £2000 to the University of Edinburgh for certain specified purposes. We know little beyond what Prof. Cushing was able to tell us of Cameron himself. The son of a Tarland farmer, he began his medical studies at Marischal College, Aberdeen, migrating in 1859 to Edinburgh, where for his graduation thesis in 1861 he took the subject of "the corporeal sympathies of certain mental conditions"—a remarkably modern theme in all its relations. He went to Australia to practise his profession and died there some fifteen years later. Prof. Cushing imagines that, pitch-forked into a new country and unable to fall back upon consultant advice for therapeutic suggestions, he determined that practical therapeutics should be emphasised at Edinburgh so far as an endowed lectureship could bring this about, and the object he had in view was as shrewd a look into the future as was the subject he chose for his graduation thesis. For more than ever the young man who goes out to practise, versed in the lore of modern medical science and perhaps considerably expert in the advanced work of the laboratory, is at a loss when confronted with the sick. The regulations governing the award of the prize were remodelled by the Educational Endowments (Scotland) Commission, with the result that the proceeds of Cameron's bequest are now awarded annually to a selected person who in the course of the five years immediately preceding has made any highly important addition to practical therapeutics, and the Senatus of the University is entitled to request, as a condition precedent, that the chosen prizeman should deliver a lecture or course of lectures giving an account of his particular contribution to the practical side of medicine. Prof. Cushing decided to give an account of the recent developments of cerebral surgery in different directions, and dedicated his lectures to a long list of his collaborators, including those successively appointed at the Johns Hopkins Medical School, Baltimore, and the Arthur Tracey Cabot Fellows since 1912 whose function it is to take charge of the Research Laboratory at Harvard. To this group he added his resident assistants both in Baltimore and Boston, making an important category of men who have contributed greatly to the progress of neurology and surgery, and in associating their names with his lectures he insisted modestly that his own position as a Cameron Prizeman was due to a generous stretching of the conditions in his favour, his activities having been mainly in the direction of the teaching from which the notable contributions of his pupils was derived. But no such apologetic words were necessary for, apart from the value of Prof. Cushing's personal work, his centrifugal influence as a teacher has been and is of supreme importance. The name of Cushing rightly finds a place in the list of Cameron Prizemen, which includes Pasteur and Lister, Ferrier and Horsley, David Bruce, Manson and Ross, Finsen, Bier, Ehrlich, Flexner, and many other pioneers of medicine.

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THE HEALTH OF THE NAVY.

For 85 years the Admiralty published an uninterrupted series of annual reports on the health of the Navy. The sequence was concluded in 1922 by the belated issue of a report for 1915, and it was then decided to allow the intervening years 1916–1920 to go by the board and to begin a new series of statistics with the report for 1921. The figures for that year have already been summarised in The Lancet,[1] and in the table on p. 987 of this issue they are compared with those for 1922, which are now available. The result is interesting. It would, of course, be rash to base much argument on the differences between two consecutive years, but for what they are worth the figures are encouraging. In 1922 deaths and accidents diminished in number; fewer men were invalided out of the service, and the daily sick-list was smaller. The total naval establishment fell from about 116,000 in 1921 to a little more than 100,000 in 1922. About half was allotted to the Home Station and a quarter each to the Atlantic Fleet and the fleets abroad. The death-rate was 4·4 per 1000 in the fleets abroad and 2·7 on the Home Station, and the most fatal single disease was tuberculosis, from which there were 36 deaths.

The incidence of tuberculosis for the Atlantic Fleet was 2·2 per 1000, and it is interesting to note that whilst marines at headquarters had a liability of 1·16 per 1000, the figure for those at sea was 1·57; the sick-berth staff had a liability of 3·18 per 1000, which represented an improvement. In general it is remarkable that the amount of tubercle in a population of young strong men, well clothed, well fed, and well housed, should remain the same in spite of every effort. The naval figures for venereal disease are particularly useful for they distinguish first infections from others. In this report they reflect the general diminution in syphilis without corresponding decrease in gonorrhœa. The fact that the numbers of fresh gonococcal infections per 1000 were respectively 60, 85, and 46 in the Atlantic Fleets, the fleets abroad, and amongst the men on the Home Station, suggests that the vaunted prophylactic methods in use in the Navy are not really effective. In the opinion of the medical officers the victims are apt to be intoxicated and too careless to use them. At any rate, these figures are very high. During 1922, 178 men were discharged on account of gonorrhœa, and there seem to be some grounds for the opinion recently expressed by a correspondent in our columns[2] that the civil authorities should take steps to prevent uncured cases returning without restriction to civil life.

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[1] The Lancet, 1924, i., 1227.

[2] The Lancet, Sept. 26th, p. 673.

Annotations.

"Ne quid nimis."

THE MEMBERSHIP OF THE ROYAL COLLEGE OF PHYSICIANS OF LONDON.

LAST August we drew attention to the fact that the Royal College of Physicians had lowered the age both for the examination for the Membership and for the conferment of the diploma from 25 years to 23. In the recent October examination 7 candidates out of a total of 53 availed themselves of this relaxation. At a Comitia of the College held on Oct. 29th, which is reported in our columns, a number of further changes were made, and as they are all in the direction of increased facilities for candidates, they will come into force at once. One provision is expressly designed to meet the case of medical men who have been engaged in special branches of practice lying outside ordinary clinical medicine. Such candidates, if over 30 years of age, may now submit work that they have published in any branch of medical science or in general literature, and if the Censors' Board decide that it is of sufficient merit they may excuse the candidate part or the whole of the examination. Another concession permits a referred candidate, in the absence of any special prohibition by the Censors' Board, to submit himself for re-examination without waiting for the expiration of six months, as hitherto has been the case. The revised regulations may be obtained on application to the Registrar at the Royal College of Physicians.

DEFECTIVE ILLUMINATION IN RELATION TO EYESIGHT.

A BULLETIN has been issued by the United States Public Health Service[1] which purports to prove by means of statistics that there is a definite relation between eye disease and the amount of illumination with which the workers are supplied. It was found that the employees at an old post office, the majority of whom were working under an average illumination of 2 to 3-foot candles, had a smaller percentage of normal vision and a greater percentage of certain eye defects than the employees at the new post office, the great majority of whom were working under all or part-time daylight. Hardly anyone would question the bad effect of straining the eyesight with poor illumination in causing fatigue of the eyes. Such fatigue may and does favour the advance of certain diseases of the eye, both superficial and deep, and certain tendencies such as a predisposition to myopia when these are already present. But to maintain that fatigue of the eyes by itself is capable of initiating disease of the eyes on a large scale—the contention of the bulletin to which we have referred—is to maintain something that is inherently improbable and of which no sort of proof is offered. When we examine the details of the statistics on which the argument is based, the fallacy becomes manifest. By far the greater proportion of the "eye diseases and defects" found in the two post offices consisted of errors of refraction and cases of "muscular unbalance." Cases of myopia which might conceivably have been due to defective illumination were hardly as a matter of fact of more frequent occurrence in the badly-lit post office than in the well-lit one. The excess of the cases of defects of the eyes in the former was due, to a small extent to hypermetropia, a condition which may exist without producing any symptoms except a liability of the eyes to be easily fatigued; to conjunctivitis, a condition due to infection, but which is undoubtedly favoured by fatigue of the eyes; but chiefly to muscular unbalance and especially exophoria, which is in no sense a disease and hardly a defect of the eyes, but is a condition which only produces symptoms when the eyes are used for long periods of convergence on near work. The balance excess of cases of defective eyesight in the badly-lit post office was mainly due to "asthenopia," a word which, if it does not mean fatigue of the eyes, means nothing. To sum up, we find no evidence that defective illumination is in itself a cause of permanent injury to the eyesight, except possibly in cases where myopia is either potentially or actually present, and in cases where there is a tendency to inflammation either of the conjunctiva or of the deeper structures of the eye. On the other hand, there is plenty of evidence of what common sense points to—that work for the eyes under defective illumination involves fatigue, and that this may cause permanent injury to "weak" eyes, and in any case is prejudicial to the efficiency of work performed under such conditions. The recommendations as to the lighting of public offices with which the bulletin concludes will be generally endorsed. These recommendations include direction not only for the provision of sufficient illumination but also for the avoidance of glare.

AN AUSTRALIAN HEALTH BULLETIN.

WE have recently received a copy of the second health bulletin issued by the Department of Public Health, Victoria, Australia. The bulletin is described as a quarterly journal issued under the direction of the Commission of Public Health for the information of councillors, medical officers of health, and health inspectors. The Commission is presided over by the Minister of Public Health, Dr. S. S. Argyle, and includes three other medical men among its eight members. Besides information about the prevalence of infectious diseases, records of new by-laws and reports, the bulletin contains well-written articles on carbon monoxide poisoning, heliotherapy, goitre, tuberculin testing of cattle, hydatids, plague, maternal mortality, infantile paralysis and cancer, and a "wireless talk" on the care of the children's teeth by Dr. O. Behrend, clinical demonstrator of the Australian College of Dentistry. Recent fatalities in bathrooms in Melbourne have drawn attention to the dangers of carbon monoxide poisoning, and some reference is made to its incidence among garage workers. In the article on goitre a description is given of the scheme which has been inaugurated for the prevention of goitre among schoolchildren in the Bairnsdale district of Gippsland. The method adopted is to give the children a dose of 2 gr. of iodide on each of ten consecutive days twice a year. No charge is apparently made for the bulletin and nothing is said as to the means of distribution, but we should imagine from the popular style of its language that this journal is likely to appeal to a much wider circle than the officials for whom it was originally intended. The issue of such authoritative bulletins by a Government health department would appear to be a very useful method of cultivating the health conscience.

HEXYL RESORCINOL: A URINARY ANTISEPTIC.

AN account of the discovery and properties of hexyl resorcinol was given in our columns[1] early this year, and it was then remarked that Veader Leonard's original communication[2] on its merits contained no detailed clinical results. We have now received a paper[3] by Roy B. Henline, of the Department of Urology of the New York Hospital, which describes his results in treating 50 cases of urinary tract infections and offers strong evidence of the value of hexyl resorcinol in practice. The claims that have been made for this drug are considerable. It is said to have all the qualifications necessary to the ideal urinary antiseptic—it is chemically stable, non-toxic, and non-irritant to the urinary tract; it is administered by the mouth and is mainly eliminated by the kidney, and it has an antiseptic action in high dilutions of urine of any reaction. Although there may be slight intestinal irritation or diuresis after the first few doses, these symptoms disappear promptly; in order to minimise gastric disturbance the drug is given in 25 per cent. solution in olive oil enclosed in a suitable gelatin capsule, and is administered immediately after meals. An excess dosage is necessary because the bulk of each dose is eliminated as a conjugate in the urine. The conjugated drug has no bactericidal action, and there is wide variation in different individuals in the amount required before the desired effect is obtained. Some will secrete bactericidal urine one hour after a small quantity has been given; on others large doses have no effect for three or four days. During the treatment, before disinfection is complete, the urine will still be a good culture medium; but after it has become sterile it will kill broth cultures of the organism originally responsible. To get good results the urine must be in contact with the infecting agent, and if the infection has penetrated the mucosa prompt disinfection cannot be expected. Treatment should be continued for at least two weeks after the urine has become sterile, and it is said that even in cases in which complete disinfection is not obtained there is often pronounced symptomatic improvement.

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[1] The Hygienic Conditions of Illumination in Certain Post Offices, especially Relating to Visual Defects and Efficiency. Government Printing Office, Washington, D.C. 20 cents.

[1] THE LANCET, 1925, i., 448.
[2] Journal of Urology, 1924, xii., 585.
[3] Ibid., 1925, xiv., No. 2.

All the cases of pyelitis and cystitis in this series reported by Henline were thoroughly investigated before hexyl resorcinol was given. Each was subjected to a rigid physical examination and all possible foci of infection were removed. A complete cystoscopic examination was made in all the cases; cultures from the bladder and each kidney were taken, and the output of urea and phenolsulphonephthalein was estimated. The urine was, of course, carefully examined microscopically and chemically, pyelograms being taken in the sitting and dorsal positions. After all possible complications had been thus eliminated there remained a series of cases of chronic infection in which there was pus and positive bacterial cultures, and it was on this series that the treatment was tried. In the 26 cases of *B. coli* infection studied, the average duration of the disease was 3·67 years. Half of them had some definite urinary complication, such as prostatitis or renal calculus, and nearly all had been under treatment, which had included dilatation of the ureter and kidney, and pelvic lavage with 1 : 1000 neutral acriflavine at intervals of from one to four weeks. The average time of treatment before hexyl resorcinol was started was six months, and after the drug was given the urine of all the patients except two became sterile within 140 days. The average time before this occurred was 63·5 days. In the two failures the infection cleared up in the kidney or the bladder, but not in both, and there was one case of recurrence in a man who had to stop treatment prematurely. Each patient received 0·3 g. of the drug three times daily, and treatment by ureteral dilatations and kidney pelvic lavage with neutral acriflavine, 1 : 1000, at intervals of one to four weeks, was continued in addition. A few of the patients also had operations performed—e.g., nephrectomy—during the period described. In 12 cases of bladder and kidney infections caused by organisms other than *B. coli*, five were caused by staphylococcus, two by *Bacillus lactis aerogenes*, two by *B. proteus*, one by streptococcus, and two by mixed infections. The average duration of the disease from the history was two and a half years, and 75 per cent. had some complication. The average length of treatment by dilatation and lavage before hexyl resorcinol was used was nine months, and after it was administered the urine became sterile in 11 of the 12 cases within 133 days. (In the other case, which was clinically cured, *B. fluorescens* persisted.) On the average it was sterile in 50·7 days; and the average time required for staphylococcal infection was only 18 days. There were no recurrences.

In brief, therefore, in this series of 38 cases 92 per cent. were cured. Of the three failures, one did not return for treatment, one still had a growth of *B. fluorescens*, and one was complicated by a bladder tumour. All these three were clinically cured. In his conclusions Henline lays stress on the necessity for complete examination of the urinary tract before starting treatment, and states that hexyl resorcinol "is apparently superior to all other urinary antiseptics described." The duration of the disease, he says, seems to have no bearing on the length of time needed to effect a cure, provided that the renal parenchyma is undamaged. By thorough disinfection of the urinary tract hexyl resorcinol is an aid in preventing the recurrence of calculi, and in post-operative urological cases it is useful in healing wounds infected by streptococci. The remainder of Henline's series of over 50 cases were instances of gonococcal infection in the male. The number was not large, but no beneficial effects were recorded. We understand that hexyl resorcinol is at present being manufactured in this country by the British Drug Houses, Ltd.

SAFETY IN RADIOLOGICAL WORK.

NOT the least important subject discussed at the recent International Congress of Radiology held in London was the protection of workers exposed to radiation. The Physics Section drew attention to need for uniformity in protective methods throughout the world, and we learn from the organising committee of the Congress that the subject is likely to be discussed again at the next international meeting to be held in Stockholm next year. The British Institute of Radiology does well through its committee to insist on the importance of this matter. Some general basis of protective methods, which can easily be put into practice, is a necessity, not only in X ray and radium work, but also in heliotherapy. The increasing use of these methods makes it the more necessary that careful attention shall be given to securing healthy conditions for the personnel. When high-power carbon arc lamps are installed the ventilation of the premises is of the greatest importance, and the nursing staff must be protected from the glare of the lamps by efficient goggles, otherwise persistent headache and lassitude will soon make their appearance. An X ray and radium protection committee was formed in this country in 1921, and they have issued a number of valuable reports. No doubt the committee will in future include in their reports every form of radiation which is used therapeutically, and we look to them to keep the medical public acquainted with such methods as may be considered advisable. In no way does this diminish the necessity for international coöperation, but it is to be hoped that this country will continue to take a foremost place in devising methods of safety for those engaged in what, in default of such methods, is a dangerous occupation.

CYTOLOGY OF CANCER.

IN a recent issue of THE LANCET[1] attention was drawn to papers by Dr. R. J. Ludford and by Prof. A. Maximow dealing with cellular changes in test-tube cultures of normal tissues. These changes were so similar to those seen in cancer cells that they led Prof. Maximow to suggest the interesting possibility of having induced a cancerous transformation of normal mammary cells by his special conditions of cultivation. We then pointed out that the morphological changes described did not necessarily represent the essential character of malignancy; they might be merely the result of abnormal conditions of growth and nutrition. This criticism finds support in another paper on the General and Experimental Cytology of Cancer by Dr. Ludford,[2] which has just appeared. In this paper the author has reviewed and summarised the vast literature on the cytology of cancer and has supplemented it by original observations. Nothing is more tedious to read than verbal descriptions of morphological appearances. Dr. Ludford has avoided this difficulty by summarising observations and theories in the form of diagrams, either original or else constructed from the authors' figures drawn in a more diagrammatic manner than the originals. "This pictographic method has been adopted," as he states, "as being more precise and more compact than it is possible for merely verbal descriptions to be. It enables the reader to survey a wide field more easily and more rapidly than is possible in any other way." The paper of 40 pages, of which almost every second page is an illustration, has the charm of a picture-book and succeeds in condensing a vast amount of information in the clearest possible manner. Dr. Ludford's general conclusion is that present microscopic methods do not enable us to distinguish between a normal and a cancerous cell. The cancer virus of Gye and Barnard is too small to be seen with the microscope in common use at the present time. The wide range of pathological variations described in the past "are the morphological expression of the reaction of the cells to the peculiar conditions of tumour growth. There is no pathological state restricted to cancer cells alone, so that there exists for the cancer cell no precise morphological diagnostic character of any kind." The paper deserves to be read by every pathologist for its contents and to be imitated in its method of presentation.

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[1] THE LANCET. Oct. 24th, p. 876.

[2] R. J. Ludford: Journal of the Royal Microscopical Society September, 1925, p. 249.

POISONS IN THE HOME.

THE letter from Mr. Frank Briant, M.P., which recently appeared in the daily press, draws attention to a danger which is well known, but of which the magnitude is perhaps seldom realised. "On a shelf in practically every home," Mr. Briant writes, "lies a bottle the contents of which are capable of causing a violent and terrible death to the whole family." This bottle holding spirits of salt or some other domestic poison must, according to law, be a distinctive one; but it is fairly clear, Mr. Briant thinks, that in many cases the law is not adhered to. Harmless substitutes might be found for domestic uses—this is a matter he leaves to chemists. Meanwhile, the public should insist that these poisons be sold only to those who are capable of appreciating their dangers and should take infinite care over the disposal of the bottle on the shelf.

The general suggestions contained in Mr. Briant's letter seem eminently sound; the difficulty lies in their practical application. A tightening of the regulations with regard to the sale of poisons, ensuring that they should only be sold in fluted bottles, may accomplish something, but much would still depend upon the public themselves, and the real crux of the matter lies undoubtedly in the better education of the public in these matters. It is no use rigidly insisting on poisons being sold only in an easily recognisable bottle if the latter is then subsequently used for storing some harmless domestic fluid with the result that familiarity breeds contempt. It is only a public educated and trained to reasonable care in these matters that can be relied upon to be immune from poison casualties. In any case there is a good deal to be said for the suggestion that harmless substitutes might be found for domestic use. Poisons in the home are used chiefly for three purposes—namely, for cleaning, for disinfecting, and for exterminating vermin. Most of the accidents arise from poisons used in the first two categories. The use of crude hydrochloric acid, popularly known as "spirits of salt," naturally finds much favour for removing calcareous deposits, especially in districts with hard water-supply. Vinegar may be used to some extent as a substitute, but in amounts necessary to produce the same effect it is, of course, more costly, and a really satisfactory substitute for "spirits of salt" would be welcomed. Accidents arising from the use of disinfectants and antiseptics are usually due to some preparation of phenol or cresylic acid. Many less dangerous substitutes for these are to be found, foremost amongst them the majority of essential oils, many of which possess extremely high carbolic acid coefficients with relatively small toxicity to human beings. For example, the coefficient of oil of origanum is 26, thyme 15, clove 9, rosemary 6, lavender 5, and sandal-wood 1½. The high coefficient of oils such as origanum and thyme is readily understood in view of their high content of such powerful antiseptics as thymol and carvacrol, but the rather high coefficient of oils such as lavender and sandal-wood is surprising. These essential oils are, of course, more expensive than disinfectants derived from crude carbolic acid, but the cost of saponaceous solutions of the cheaper essential oils should not be prohibitive. Other comparatively innocuous antiseptics are to be found amongst oxidising agents such as hydrogen peroxide, sodium hypochlorite, and the organic chloramine derivatives. A number of proprietary antiseptics of low toxicity based on these substances are available at a reasonable cost. Accidents arising from the use of vermin killers are rare, for exterminators of the specific virus type are not poisonous to human beings.

THE CINEMA IN NEUROLOGY.

THE slow-motion cinematograph has gone far to prove that the sluggishness of man's reflexes cuts him off from a world where time moves leisurely and everything is more beautiful and more graceful than we recognise. Bacteriology has abolished the conception of dirt, and it may be that the cinema, *mirabile dictu*, will convince us that ugliness is a myth. In the meantime its possible applications to medicine have escaped the notice they deserve, and it is pleasant to note the work on bradykinetic analysis by the cinematograph which has been carried on during the past few years by Dr. Frederick Tilney and Dr. S. Philip Goodhart, professor of clinical neurology at Columbia University, New York. Working at the Montefiore Hospital and at the University they have prepared a series of films showing movements in nervous diseases, and on Oct. 23rd Dr. Goodhart gave a demonstration of his work at the Paris centre of the American University Union before a distinguished audience of neurologists. The films are the only ones at present in existence dealing (from the technical aspect) with nervous disease, and they include records and analyses of muscular movements in dystonia musculorum, encephalitis lethargica, chorea, progressive muscular dystrophy, and multiple sclerosis. There are records at the usual speed and at slow motion, and they have proved of value not only for undergraduate teaching, but for case records, verification of diagnosis, and follow-up work. The six reels shown illustrated the special uses of the method—namely, determination of the character of muscular movements; analysis of reflex movements; revelation of movements inappreciable by the naked eye; differentiation between functional or psychic and organic states; record for comparison with necropsy findings, and prognostic indications. It is found that a long, slow, progressive muscular wave appears in spasmodic movements occurring in encephalitis and seemingly in other conditions referable to lesions of the basal ganglia (thalamic and striate regions). Whether this peculiar movement is diagnostic of basal (striate) lesions is not yet certain, but if so, slow-motion analysis should be of special diagnostic value. Seemingly purposeless movements prove, on analysis, really of associative and symbolic character, showing emotive effects and a segmental nature. They express a psychic state, representing approach and retreat, entreaty and a negative feeling of shame. Slow-motion analysis shows the relation of symbolic and emotive movements to motor effects and reveals possible connexions between the corresponding sensory, or thalamic, and motor, or striate, lesions. Hysteria may thus have basal ganglionic relations. In all such conditions there is a suggestion of the effect of constant nervous stimuli in creating minute lesions, too fine for demonstration by present methods, which are at the basis of conditions now considered purely psychic or functional. In recording reflex movements it is found that in some states the patellar reflex, and possibly other reflexes, have a pendulum-like character, the limb continuing to oscillate for a number of times after the hammer blow. There is also a remarkable prolongation of the interval elapsing between the hammer blow and the first reflex response. Movements inappreciable to the naked eye exist in dystonia musculorum, and this fact is useful in diagnosis and prognosis since dystonia musculorum is incurable. Certain cases thought to be hysteria or dementia præcox have been found to be really cases of dystonia. Many other movements are well shown by the films—for instance, the champing and chewing movements often present in postencephalitic states, and a very interesting case is shown, in which, following grave fright produced by a violent thunderstorm, the patient presented movements initially of escape, or fleeing, and considered of psychic character. Slow-motion analysis showed the progressive muscular wave, so strongly suggestive of striate lesion, referred to above.

TYPHOID CARRIERS IN GLASGOW.

DURING Dr. A. K. Chalmers's last year of office as medical officer of health for Glasgow an investigation was carried out among the contacts of enteric fever patients to ascertain to what extent the source of infection might be attributed to carriers. The period covered was from Sept. 1st, 1922, to Sept. 30th, 1923. The investigation revealed that among 374 home-contacts of 102 patients only in eight instances was there bacteriological evidence of a similar infection. Further inquiries showed that four of these contacts were probably " missed " cases of a mild nature. Of the remaining four, three (all women) continue to be definite carriers and remain under supervision, two of them in the city and one in another district. None of them, however, take any part in the preparation of food. The fourth carrier, an ex-Service man, with a history of dyspepsia dating from military service, had large numbers of typhoid bacilli in his excreta. He was treated with autogenous vaccine and his fæces were found to be negative on two occasions a year later, when the dyspeptic symptoms had entirely disappeared. It is suggested that this investigation shows that the carrier is only responsible for the incidence of enteric infections to a very small extent. Three female carriers were admitted to Belvidere Hospital with a view to studying the best methods of curing the condition. No results were obtained by dietetic, antiseptic, and vaccine treatment, and only after excision of the gall-bladder were continuous negative findings obtained in two of the cases. The third case was detained for a much longer period, and finally left hospital of her own accord for her home in the north of Scotland. An example is given of a family infected by a carrier. On Nov. 17th, 1923, a child of 6 was notified as having enteric fever. He was one of a family of Russian Jews, numbering 11 persons, and including a grandmother aged 60. Ultimately the grandmother was found to be a carrier, as the result of a notification of a second child in June, 1924. In July two more children, aged 11 and 15, sickened, and in August the other inmates of the house were inoculated. No further cases have occurred. The family remain under supervision, and the grandmother is still a carrier.

HOSPITALS AND HEALTH CENTRES.

A LEADING article under this heading prefaces a special issue [1] of the *Architects' Journal* on Oct. 28th. The special issue is itself a sequel to a similar issue published by that journal in June of this year, and the two fully illustrated supplements comprise a valuable story of hospital construction. Both are well and profusely illustrated, and the text which accompanies them explains clearly such pertinent matters as the conversion of country mansions into special institutions and the heating, ventilation, cleansing, and flooring of hospitals. A section on modern American hospitals gives a series of typical ground plans and diagrams of new fittings ; there are several valuable suggestive notes and plans on the construction of nurses' homes. The leading article rightly suggests that while great central hospitals and special institutions, whose plans and elevations make up a large portion of the special issues, must be built with all the knowledge and skill which architects can provide to render them practical as well as comely, the great need of the immediate future may be the erection of smaller hospitals, sometimes as annexes to central institutions situated where further development is impossible, sometimes to meet the needs of growing communities, and sometimes to provide a focus of institutional treatment in rural areas. There is no doubt that this view of what will be required in the future is a sound one. The present shortage of hospital beds in the country has been estimated by the Voluntary Hospitals Commission at 10,000. The hospitals implied require building and will have to be built, not in order to realise either the dream of an architect or the ambition of a community, but for the needs of a public which will have to find a large share of the money.

The Services.

ROYAL NAVAL MEDICAL SERVICE.

Surg.-Comdr. C. R. Rickard is placed on the Retd. List with the rank of Surg.-Capt.

ROYAL NAVAL VOLUNTEER RESERVE.

Proby. Surg. Sub-Lt. E. I. Puddy to be Surg. Sub-Lt.

ROYAL ARMY MEDICAL CORPS.

Capt. J. G. Gill relinquishes the temp. rank of Maj. on ceasing to be empld. as Dep. Asst. Dir. of Hygiene and Pathology, N. Ireland District.

A. K. J. Finch to be temp. Lt.

ARMY RESERVE OF OFFICERS.

The undermentioned Colonels (late R.A.M.C.), having attained the age limit of liability to recall, cease to belong to the Res. of Off. : E. W. Bliss, T. H. M. Clarke, R. W. Clements, P. Evans, H. Hewetson, A. W. Hooper, A. E. C. Keble, C. B. Martin, G. A. Moore, F. S. Penny, H. V. Prynne, E. W. Slayter, G. St. C. Thom, H. S. Thurston, and C. W. Profeit.

SUPPLEMENTARY RESERVE OF OFFICERS.

Capt. J. R. S. McDowall, late R.A.M.C., T.A., to be Capt.

Capt. A. R. Balmain, late R.A.M.C., Spec. Res., to be Lt.

TERRITORIAL ARMY.

Maj. W. C. Gunn, from Sanitary Companies, to be Maj.

Capt. D. Mackie to be Maj.

Maj. A. W. Uloth, late R.A.M.C., to be Capt., and relinquishes the rank of Maj.

Sanitary Companies : Capt. A. Davidson to command the 5th (Scottish) Sanitary Company.

DEATHS IN THE SERVICES.

Capt. Thomas Barker Amyand Haggard, who died recently at the age of 50, was a graduate of Cambridge University, and studied medicine at St. Bartholomew's Hospital, where, after taking the Conjoint qualification in 1903, he acted as house surgeon. Later he was appointed house surgeon at the Victoria Hospital for Children, Chelsea, and clinical assistant at the Central London Ophthalmic Hospital. Capt. Haggard, who in 1907 married his cousin, a daughter of the late Sir Rider Haggard, quite recently retired from the Royal Army Medical Corps.

It has been officially announced that separation allowance will be granted to I.M.S. and R.A.M.C. officers when posted to stations such as Razmak, where their families are not allowed to accompany them. Allowances range from Rs.40 a month for lieutenants to Rs.340 for Deputy Directors of Medical Services.

A Fleet Order notifies that the loan of a surgeon commander R.N. is required by the Royal Australian Navy in exchange. The exchange is for two years and the officer must sail at an early date.

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[1] Modern Hospitals: Second Special Issue. The Architects' Journal, 9, Queen Anne's-gate, Westminster. Vol. lxii., No. 1608. 1*s.*

Modern Technique in Treatment.

A Series of Special Articles, contributed by invitation, on the Treatment of Medical and Surgical Conditions.

CXLVI.

THE TREATMENT OF BREAST ABSCESS.

While the typical breast abscess of lactation follows infection through a cracked nipple, there are several precursors and variations whose treatment falls under this general heading.

Milk Engorgement.

This is produced by the blocking of a duct or ducts with epithelial débris during lactation or by the sudden termination of breast-feeding. It may simulate breast abscess, and if unrelieved passes into it. The breast becomes swollen, tense, and painful, and the affected ducts present an irregular hardness without the presence of the central area of softening which indicates pus. This condition will be prevented if care is taken of the nipples (see the Treatment of Sore Nipples, The Lancet, 1924, ii., 1299), and suitable measures are used when lactation has to be terminated.

The breast should be supported by a thick pad of cotton-wool with a bandage passing beneath it and over the opposite shoulder. The nipple should be cleansed with pledgets of cotton-wool soaked in boric lotion, and the breast pump employed. Hot fomentations should be avoided, but lotio plumbi may give considerable relief. If the need for breast-feeding has ceased a belladonna plaster should be used, and the following additional steps taken to inhibit further lactation: drastic diminution of fluids, the administration of mist. alba m. and n., and if the breast is not too painful it should be firmly bandaged over layers of cotton-wool after evacuation with the breast pump.

Acute Puerperal Mastitis.

This condition is one in which the inflammation is spread through one or more lobes of the breast, and is the immediate precursor of breast abscess. Practically all cases arise from a crack or abrasion of the nipple. The breast shows all the signs of an acute inflammation and the general constitutional disturbances are very marked, while only the absence of an area of fluctuation or of a central softening distinguishes it from breast abscess proper. Until the latter diagnosis is made it should be treated energetically on the same lines as milk engorgement.

The following points should be noted. The abscess should not only be looked for in the area of greatest swelling in the breast substance, but also under the nipple, where one of the dilated ducts may be infected. The possibility of the pus tracking along the deep aspect of the breast must be borne in mind and increased prominence of the breast and pointing at the outer and lower margin watched for. In cases of doubt, if the constitutional symptoms are severe, an exploratory incision may be made. The incision should be planned as indicated in a subsequent paragraph. Even if pus is not found the congestion will be relieved and drainage provided in the pre-suppurative stage. The incision should be lightly packed with gauze soaked in flavine or acriflavine, or better still in an emulsion of equal parts of flavine and liquid paraffin.

Acute Puerperal Breast Abscess.

When this condition is diagnosed from consideration of the foregoing facts, extreme measures must be taken at once. No attempt should be made to treat the breast with fomentations, nor should any small incision be made under local anæsthesia. In order that the whole breast shall not become infected and subsequently fibrosed the affected lobes should be thoroughly opened up under a general anæsthetic.

Abscesses are most frequently found in the following situations: (1) under the areola, (2) deep to the nipple in one of the dilated ducts, (3) in the main secreting portion of the breast, (4) the "shirt button" abscess on the posterior surface.

(1) The subareolar abscess appears close to the nipple as a reddened area in which fluctuation can be readily detected. Usually the rest of the breast is unaffected. An incision should be made starting at the base of the nipple itself and extending radially from it over the centre of the affected area to the outer limit of the zone of induration. The incision should be deepened with the knife until pus is found, though in this area it is usually very superficial. The abscess cavity when completely opened up is mopped out and temporarily packed with gauze. On removing this packing careful inspection will show whether pus is welling up from a more deeply placed abscess.

(2) An abscess in a dilated duct deep to the nipple can be recognised by a markedly prominent and painful nipple surrounded by an inflammatory zone, in which deep œdema is present and possibly fluctuation. There may be a purulent discharge from the nipple. This type of abscess will extend outwards into the parenchyma unless opened. The treatment is the same as that of the subareolar type.

(3) The parenchymatous abscess has already been distinguished from acute puerperal mastitis. The skin over it is red and œdematous and the breast feels irregularly hard. This type of infection is commonest in the lower half of the gland, but a decision must be made as to which lobes are involved and the treatment varied accordingly. In the lower half of the gland an incision should be made commencing just within the areola and extending radially over the lobe in which fluctuation has been detected and ending at the periphery of the breast. The lobe should be fully opened, carrying the incision well into its substance; the finger should be introduced and any loculi in adjacent lobes containing pus sought for and opened. These are sure to communicate with the main abscess cavity in the lobe most affected, but unless the fibrous partitions are broken down satisfactory drainage will not be obtained. Care should be taken that a pocket of pus is not left unopened in the region of the nipple. A half-inch drainage-tube of red rubber, with thin walls and several side openings, should be placed in the incision emerging at the outer end, and the incision lightly packed with gauze soaked in flavine and paraffin emulsion. After 24 hours the wound should be dressed, the tube and packing removed, and the wound repacked. The packing should be changed daily. After two days it is best to discontinue the flavine packing and to substitute eusol or Dakin's solution. The wound should not be swabbed out; any débris or small sloughs are best removed by irrigation with saline or eusol at the time of repacking. This also makes the removal of the packing an easy and painless process. The packing itself should be done systematically, being gently laid in from end to end of the wound in long strips.

In the case of the upper half of the gland a completely radiating incision is not satisfactory. In the first place, it will be objected to by the patient; and secondly, it will not give dependent drainage. An incision 2 or 2½ in. in length should be made over the inner part of the most affected lobe, extending as before radially from the nipple. This should be placed so as to lie somewhat obliquely, so that an incision placed in the most adjacent part of the lower half of the breast may be made to communicate with it. The second incision need not be much more extensive than the first, and may be commenced outside the areola. The intervening bridge of breast tissue should be broken down with the finger, and a drainage-tube inserted from the lower incision. A smaller tube may be placed in the upper one, and both incisions packed as before.

Cases treated in this way will be found to clear up much more rapidly than those in which more conservative measures are employed. Under the eusol treatment the wounds granulate up very rapidly. As soon as the discharge has ceased to be purulent the packing may be safely left in for two days, though a daily dressing is more comfortable. When the granulations reach the surface a dressing of sterile vaseline spread on gauze is best.

(4) The "shirt button" abscess is recognised by marked prominence of the breast with but slight signs of inflammation in the gland itself. An area of fluctuation may be detected at the outer margin of the lower half of the gland. The best incision for opening this type of abscess is a semilunar one on the margin of the gland, and the pus will be found between the breast and the pectoral fascia. When it has been evacuated the finger should be inserted and a search made for the area of gland substance from which it has arisen. It may be possible to open this adequately from the deep surface; if not, a small radially placed incision should be made over the affected lobe and carried through to the posterior part of the breast. Tubes should be inserted in both incisions, but packing will only be of use in the anterior one. The tube on the posterior aspect of the breast should not be removed for four or five days, being taken out when the dressing is done, boiled, and replaced. At the end of that time it may be removed altogether or a smaller one inserted for a few days more.

The possibility of this being a retromammary abscess arising from caries of a rib or from an empyema must be borne in mind. In both cases the breast will be prominent, and one of these conditions should be suspected from the absence of signs in the breast itself. An abscess from caries of a rib is the more common condition, and must be inferred when examination of both the chest and the breast is negative. Both these abscesses will be beneath the pectoral fascia, and they tend to point a little further out towards the axilla.

The subacute mammary abscess must be mentioned in passing as there is often some difficulty in differentiating it from malignant disease. It presents an œdematous indurated condition of the skin, often with retraction of the nipple, which very closely resembles carcinoma of the breast. However, the length of history, the association with recent lactation, and the absence of a lump should help in the diagnosis. Enlarged axillary glands will be present in both conditions.

Galactocele.

This condition is the only form of chronic breast abscess within the scope of this article, and must be mentioned in conclusion. Tuberculous mastitis, gumma, and actinomycosis are pathological rarities. It is a condition of retention of milk in a dilated duct, together with a mild degree of infection. It may be readily recognised as a distinct elevation near the nipple produced by a round or pear-shaped tumour, in which fluctuation may be readily obtained. It is painless, and firm pressure may produce a spurt of milky fluid from the nipple. In long-standing cases caseation of the contents takes place. It should be excised when lactation is over, the usual radiating incision being employed.

J. BASIL HUME, F.R.C.S. Eng.,
Chief Assistant, Surgical Unit, St. Bartholomew's Hospital.

Messrs. Watson and Sons (Electro-Medical), Ltd., have devoted their Bulletin No. 73 to apparatus producing what is known as artificial sunlight. The description of apparatus is prefaced by some general remarks on the nature, properties and biological significance of the part of the spectrum dealt with. Heliotherapy in medicine has come to stay and there is now a wide choice in the apparatus available. The two chief sources of artificial sunlight are either mercury-vapour lamps supplemented by some source to compensate for the lack of the longer wave-length, or open arc lamps of the carbon or tungsten or tungsten-cored type. There is a wide selection described and illustrated in this bulletin, and purchasers will do well not to forget that the best protective goggles are cheapest in the end and should be purchased against their absorbing power. It is impossible to tell by naked-eye inspection what is a good goggle and the spectrograph is necessary for this purpose.

Special Articles.

PROCEEDINGS OF THE ROYAL COMMISSION ON NATIONAL HEALTH INSURANCE.*

(Continued from p. 829.)

THE evidence which is summarised below is the final instalment of the report of the proceedings prior to October. The Royal Commission resumed its proceedings recently, and has been hearing further official evidence.

The National Council of Agriculture.

(App. LXXXV.; Q. 21051–21217.)

The National Council of Agriculture for England, represented by Mr. James Donaldson and Mr. Denton Woodhead, is strongly opposed to the pooling of the surpluses of Approved Societies, on the ground that the persons engaged in agriculture and other rural occupations are as a class healthier than most other industrial classes. The witnesses reminded the Commission that agriculturists had objected from the outset to the flat rate of contribution, and they cited statements made on behalf of the Government in 1911 to the effect that Approved Societies would be allowed to use their own funds for their own members.

It was elicited from Mr. Woodhead in the course of examination that one reason why his Society had a good surplus was that, though a rural workers' society, they excluded unhealthy members in the country.

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* In previous articles the proceedings of the Commission were reported under the following headings: Introductory Note; The Scope of the Insurance Scheme (see THE LANCET, Jan. 31st, pp. 247–8); The Provision of Medical Benefit (Feb. 7th, pp. 301–3; Feb. 14th, pp. 355–6; Feb. 21st, pp. 403–5); Financial Provisions of the Act (Feb. 28th, pp. 454–7); Medical Certification and the Regional Medical Staff (March 7th, pp. 508–9); The Approved Societies and the Money Benefits (March 14th, pp. 564–5; March 21st, pp. 623–4); Evidence of the Hearts of Oak Society (March 28th, pp. 677–9); Evidence of the National Conference of Industrial Assurance Approved Societies and of the Manchester Unity Approved Society (April 4th, pp. 731–3); Evidence of Independent Order of Rechabites, of Rational Association Friendly Society, and of Miners' Societies (April 11th, pp. 784–6); April 18th, p. 839; Evidence of Mr. Alban Gordon (April 18th, pp. 839–40); Evidence of Joint Committee of Approved Societies, of Stock Exchange and Lloyds' Health Insurance Societies, and of Group of Catholic Approved Societies (April 25th, pp. 889–91); Evidence of the National Insurance Beneficent Society (May 2nd, pp. 943–4); Evidence of the British Medical Association (May 9th, pp. 993–5); Evidence of the British Dental Association and other Dental Organisations (May 16th, pp. 1044–6); Evidence of the Insurance Committees (May 23rd, pp. 1097–8); Evidence of Various Approved Societies (May 30th, pp. 1135–6); Evidence of the British Medical Association (June 6th, pp. 1184–6; June 13th, pp. 1248–50; June 20th, pp. 1315–6); Evidence of other Medical Bodies (June 20th, p. 1316; June 27th, p. 1348); Individual Evidence (June 27th, p. 1348); Medical Services in the Factory, Ministry of Health Inquiry Room, Evidence of National Sailors' and Firemen's Union and of Loyal Order of Ancient Shepherds (July 4th, p. 36); Evidence of Friendly Societies' Medical Alliance, South Wales and Monmouthshire Alliance of Medical Aid Societies, Friendly Societies' Medical Officers' Union, Association of Approved Societies, Standing Committee of Scottish Insured Women, and Society of Medical Officers of Health (July 11th, pp. 86–8); Evidence of the British Hospitals Association, the Sheffield Joint Hospitals Council, and the Middlesex Hospital (July 25th, pp. 181–2); Evidence of Opticians' Associations (August 1st, pp. 224–6); Evidence of Council of British Ophthalmologists, of Ophthalmic Benefit Committee, of Chemists, and of Drug Store Proprietors (August 15th, pp. 348–50); Evidence of Chartered Society of Massage and Medical Gymnastics, of the Ivory Cross, of Scottish Panel Chemists, Practice among Highland Crofters, and of National Farmers' Union of Scotland (August 22nd, pp. 402–3); Evidence of Nursing and other Women's Organisations (Sept. 5th, pp. 519–20); Views of Trade-Unions, Evidence of Approved Societies (Sept. 19th, pp. 618–9); Evidence of Joint Tuberculosis Council, Cambridgeshire Tuberculosis After-Care Association, London County Council on Treatment of Tuberculosis, British Social Hygiene Council, and London Insurance Committee (Oct. 3rd, pp. 722–3); Evidence of Society of Apothecaries of London, East of Scotland Dentists' Panel, Association of Poor-law Unions, Association of Parish Councils of Scotland, and of Mr. W. J. Braithwaite (Oct. 17th, pp. 828–9).

References to the paragraphs in the printed statements issued as appendices to the reports of the oral evidence are given thus: "App. X. 69," and references to the oral evidence thus—Q. 1369.

Evidence as to Casual Employees of Councils.

(App. LXXXVIII. and Q. 21317–21394.)

Mr. J. H. Barnby, of the Stepney Borough Council, stated that the Council employed persons on Sundays for the cleansing of the streets. He claimed that, as this employment was purely casual and intermittent, the men should not be subject to deductions for National Health Insurance contributions.

It was suggested to the witness that although this was part-time employment it was to some extent regular, and other types of casual employment were pointed out as having a better claim for freedom from contributions. It was also made clear to him that there was nothing in the Act to prevent the Council paying the whole contribution if, as appeared, they were willing to do so.

Delay in Paying Sickness Benefit.

(App. XCVII. and Q. 22731–22837.)

Miss M. A. Hilbery, who had at one time been a sick visitor for the Prudential Approved Societies, gave evidence in which she suggested that sickness benefit was often withheld from insured persons for long periods, and that this resulted either in return to work before recovery or actual hardship in regard to obtaining food.

National Insurance Audit Department.

(App. CI. and Q. 23209–23289.)

Mr. W. A. Middleton, acting chief auditor, gave an account of the whole machinery of audit of the accounts of Approved Societies. He pointed out that an Interdepartmental Committee reported in 1912 in favour of the employment of a whole-time audit staff, and said that their recommendations had been followed.

The witness said that the auditors undertook a great deal of work not ordinarily falling within the scope of an auditor's duties, but that there was no precedent for the working of such an enormous scheme as that under the National Health Insurance Acts, and a great deal of assistance had to be rendered to the societies.

> Is it a fact that it is the smaller societies that cause you greater trouble in your audit than the larger societies?—There is no shadow of doubt about that. It is a question of part-time officials having these complicated Acts and regulations which are beyond their capacity—not beyond their zeal.

With regard to the falsification of claims for benefit, it was stated by way of illustration that sometimes the dates were altered on medical certificates in order to extend the benefit period, or such certificates were fabricated by copying a signature from a genuine certificate.

> Experience shows that there is a greater temptation to construct false maternity benefit claims because of the comparatively large sums obtainable thereby—many such cases are disclosed by discovery of a second claim purporting to be in a member's name following at too short an interval upon another in the same name, either or neither being genuine.

The cases of fraud or failure in Insurance Committees' accounts have been few in number, and the amounts involved comparatively small.

Chartered Accountants of Scotland.

(App. LXXIX. and Q. 20342–20534.)

The evidence given on behalf of this body by Mr. John Reid was to the effect that the system of auditing by whole-time officials involved long delays and was not in the best interests of the successful working of the system, and that the multitude of duties which the auditors undertook showed a good deal of confusion as between auditing proper and actual supervision or inspection.

It was suggested that the auditing of the accounts of societies, both on the State side and the voluntary side, should be entrusted to outside professional auditors.

Evidence from the Department of Economics, University of Cambridge.

(App. LXXVI. and Q. 19794–19899.)

Mr. Joseph L. Cohen, of the Department of Economics of Cambridge University, criticised the present scheme of benefits as being wholly inadequate, and he advocated an extension of benefits all round. He stated that he could find no definite principle behind the present rates of money benefits, which bore no relation to any significant fact in industrial life. He also stated that—

> Administration of insurance by the Approved Society combines all the faults and none of the virtues of insurance by industry or insurance by the State, or insurance by local authorities. It cannot claim the virtues of being a democratic form of organisation.

Mr. Cohen advocated a system of health insurance administered by the Minister of Health, the benefit being paid through the Post Office and employment exchanges with a State guarantee covering all emergencies in the life of a workman's family.

The Actuarial Basis of the Act.

(App. XCIV. and Q. 22252–22404.)

Mr. Walter Farris, secretary of the Loyal Hearts Friendly Society, questioned the necessity for the whole actuarial basis of the Act. He said :—

> Under the National Health Insurance Act, spread over the whole of the insured persons, there must always be a similar range of ages and liability and the cost of benefits must remain fairly constant and proportionate to the number of insured persons, because the general public is forced to come under the Act at the age of 16 years and at the age of 70 ceases to be entitled to sickness benefits.

The witness suggested that there was no object in accumulating enormous reserve funds for the benefit of a future generation, and he proposed that there should be a system by which Approved Societies should be given credit from year to year for the expected sickness of their members who are actually alive at the commencement of each year, instead of the present system, which credits societies at the commencement of membership with the present value of the expected sickness of the member during the whole of the years that the member is expected to live.

His proposals included provision for continuous sickness benefit, the abolition of the three days waiting period, and exemption from arrears. He estimated that there would be accumulations in about 30 years' time of a gigantic sum of £818,000,000, which would never be wanted. It was suggested to the witness in examination that the figure was much more likely to be £200,000,000.

> I want to know whether that trifling difference would make any change in your point of view with regard to the present system?—Even if I accepted that figure I should still contend that the system that I suggest would be far preferable and there would be greater benefits to the insured person.

Mr. Farris was reminded, with regard to reserves, that there was a process continually going on of eating up existing reserves and replacing them by new ones.

The Government Actuary's Evidence.

(App. LXXXVII. and Q. 21237–21316.)

Mr. Henry, the Deputy Government Actuary, gave evidence with regard to the 1922–23 valuations of Approved Societies. He said that, with the exception of the disablement experience of women—

> the cost of benefits has been much below the provision made for it, 38 per cent. of the surpluses being attributable to this source. It should, however, be pointed out that the cost of disablement benefit in the case of both men and women has been constantly rising during the four years. The relation of the average cost of the period to the corresponding "expectation" is not altogether, therefore, a satisfactory index to present and future conditions in regard to this benefit.

Roughly speaking, the surplus on the last valuation amounted to about three times as much as that in 1918, but the surplus consists to quite a material extent of monies carried forward from the earlier valuation.

Since 1922 the sickness experience has been more unfavourable and there has been a steady downward curve so far as surplus is concerned.

The estimated total surplus of Approved Societies on the results of the 1922–23 valuations, the last of which will be published in 1926, is about £42,000,000, of which, said Mr. Henry, £14,000,000 must be reserved, leaving £28,000,000 disposable, to which has to be added £8,000,000 from the earlier valuation. The total disposable surplus was thus estimated at £36,000,000, or about £7,000,000 a year, to be spent over five years.

THE HEALTH OF THE NAVY IN 1922.

THIS report[1] gives a satisfactory account of the health of the Navy in 1922. Compared with the preceding year, there were fewer cases of illness or accidents, fewer deaths, fewer invalidings, and fewer men daily on the sick list. The table appended shows the distribution of the casualties.

For some reason the 4300 marines at headquarters are separated off from the 96,560 other men in the Service who are called the Total Force. In 1922, as against 1921, there was a reduction of about 16,000 in the total naval establishment, which falls readily into three great groups—viz., the Atlantic Fleet, the fleets abroad, and the Home Station. The last accounts for about half the establishment and the other two for a quarter each. The men on the Home Station include recruits, men under training or in depôts, and those awaiting discharge. The death-rate was 4·4 per 1000 in the fleets abroad and 2·7 on the Home Station; there were 99 deaths from drowning (54 of them in ships lost), 36 from tuberculosis, 32 from injuries, 25 from pneumonia, 13 from diseases of the intestines (10 from appendicitis), 12 from influenza, and 11 from malignant disease. The invalidings were, in order of magnitude, as follows: For diseases of the eye, 348; diseases of the ear, 260; tubercle, 198; gonorrhœa, 178; organic heart disease, 146; deformities of the limbs, 135; and neurasthenia, 111. Only 24 were invalided for syphilis, but there were three times as many in an average year before the war. A very valuable table on pp. 14–18 shows the number invalided for each disease group in each year of age or service. Invalidings are most frequent between 21 and 23 years of age, and about the fourth or fifth year of service. Deformities of the limbs cause most discharges in the first year of service; eye diseases go on steadily all through; ear diseases have their maximum in the first five years; heart diseases in the first two years and again after men have re-engaged; and tubercle has a maximum in the first five years and again, like organic heart disease, after re-engagement. It would therefore seem to be acquired, in part, in the service period. At the higher ages more men are discharged for tubercle than for venereal disease.

HEALTH STATISTICS IN THE GROUPS, ROYAL NAVY, 1922.

Figures for 1921 are in italics, on the left of columns.

Per 1000 men.	Training establishment.		Atlantic Fleet.		Fleets abroad.		Home Station.		Total force.		Marines at headquarters.	
Number in group	*3,637*	2,293	*29,050*	27,200	*26,950*	27,750	*54,700*	41,610	*110,700*	96,560	*5,480*	4,300
Wounded or killed in action	—	—	*0·03*	0·03	*0·28*	—	*0·34*	0·02	*0·24*	0·02	*2·2*	1·62
Other injuries	*100*	105	*86·9*	85	*112*	119	*82*	87	*91*	95	*141*	122
Venereal disease	—	—	*107*	93	*179*	151	*81*	80	*113*	104	*52*	57
Other diseases	*1,200*	770	*290*	282	*427*	399	*404*	383	*379*	360	*459*	427
Total cases of disease or injury	*1,299*	875	*483*	460	*720*	668	*569*	550	*583*	559	*653*	608
Invalided	*61*	41	*18*	14	*28*	20·7	*32*	34	*23*	20	*45*	29
Dead	*6*	4·8	*4*	3·6	*4·4*	4·4	*2·9*	2·7	*3·6*	3·4	*1·6*	1·2
Sick daily	*77*	31·3	*18·6*	17·5	*29·9*	26·1	*27*	27	*25*	24	*21*	22
Loss of service—												
Per man in days	*14·7*	11·2	*6·8*	6·4	*10·9*	9·5	*9·9*	10	*9·6*	8·8	*7·9*	8
Venereal disease	—	—	*2·2*	2·1	*4·3*	3·02	*2·7*	2·6	*2·9*	2·6	*1·4*	1·7
Less venereal disease	—	—	*4·6*	4·3	*6·6*	6·5	*7·2*	7·4	*6·7*	6·2	*6·5*	6·3
New Cases of Individual Diseases (per 1000 men).												
Enteric fevers	—	—	*0·27*	0·22	*1·6*	0·6	*0·3*	0·18	*0·6*	0·33	*0·2*	0·46
Influenza	—	—	*35*	67	*35*	28	*27*	45	*31*	47	*6·7*	66
Pneumococcal infection (lungs)	*12·3*	3·5	*1·4*	1·5	*1·8*	2·4	*3·7*	3·3	*2·7*	2·5	*4·5*	4·4
Rheumatic fever	*18·4*	9·6	*1·7*	1·7	*2·3*	2·1	*2·5*	2	*2·3*	1·9	*3·8*	2·1
Tuberculosis	—	—	*2·3*	2·2	*2·3*	1·9	*2·4*	2·5	*2·4*	2·3	*3·6*	1·2
Appendicitis	—	—	*3·3*	2·7	*3·7*	2·9	*3·6*	4·6	*3·6*	3·7	—	—
Catarrh	—	—	*53*	43	*63*	73	*78*	70	*68*	63	*140*	76
Tonsillitis	—	—	*24*	23	*35*	31	*38*	32	*33*	29	*23*	23
Chancroid	—	—	*12*	12	*33*	28	*8*	5	*15*	14	*4*	2
Syphilis, first record	—	—	*12*	9	*17*	10	*8*	8	*11*	9	*5*	7
Gonorrhœa, acute	—	—	*58*	60	*89*	85	*46*	46	*60*	60	*22*	27
Total fresh cases, venereal	—	—	*82*	81	*139*	123	*62*	59	*87*	83	*31*	36
Scabies	*43*	31	*27*	12	*18*	10	*40*	25	*31*	17	*28*	11

Of the vaccinations on entry only 8 per cent. (136) were primary. In 1921 28 per cent. of the new entries had to be vaccinated for the first time, and it looks almost as though the public were vaccinating itself as it should, but secretly. The Army has ceased to publish these vaccination statistics since the war, and no appeal to its experience can be made for confirmation or contradiction. Diphtheria and enteric fever had only half the incidence of 1921. Influenza was chiefly prevalent on the Home Station and in the Atlantic Fleet, and there were 67 cases in the latter as against 35 in 1921. The percentage case-mortality was 0·48 in the Atlantic Fleet and 0·16 on the Home Station; no one died in the Mediterranean. There were two meningococcus infections, of which one was at Harwich, where there had been no case for two and a half years. The boy had not been on leave for six weeks, and the examination of 456 contacts did not reveal any carrier. The other case, just as mysterious, was in a battleship near Constantinople, and neither was followed by any other case. The percentage mortality of pneumonia was 12 on the Home Station, 10 in the Atlantic Fleet, and 3 in the Mediterranean, which suggests that it is not without good reason that elderly persons are sent to the Riviera in winter. Tubercle caused much the same loss in 1922 as in 1921. Marines at headquarters had a liability, 1·16 per 1000, and for marines in ships it rose to 1·57; this was, however, a great fall from that of 1921 (3·2). The sick-berth staff had a liability of 3·18, which was the lightest they have had for years. The naval figures for venereal diseases are particularly useful, for they distinguish first infections, and in 1922 the cases of soft chancre and syphilis have decreased. Gonorrhœa cases were as before, but it is noted that this disease disappeared at Gibraltar when all brothels were closed. Prophylactic measures do not prevent these diseases because, in the opinion of medical officers (pp. 42 and 67), the victims are apt to be intoxicated and too careless to use them. Two cases of encephalitis lethargica occurred, one at Oban and one in China, and there were also two cases of anthrax, each ascribed to a new shaving-brush. Great attention is being paid to dental repair, and a 17 per cent. fall since before the war in diseases of the digestive system may be the result. Malignant disease (16 cases) showed a slight decrease; alcoholism was also less; two cases of mild poisoning were due to men strenuously treating their own colds.

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[1] Statistical Report of the Health of the Navy for the year 1922. Published by H.M. Stationery Office, London, 1925. Pp. 176. 6s.

We asked last year for more information about what happens to boys, to the cadets at Dartmouth, and to the younger men under training. If anything, rather less information is given. The tables are again rather inconsistent, in a manner unusual in Government publications, and those on pp. 170 and 91 do not bear comparison. Calculated on the figures of p. 170, pneumonia has greatly decreased, the rate being 3·5 per 1000, as against 12·3; there is no statement about tuberculosis. In the youths' training establishment the phenomenal death-rate of 23·52 per 1000 refers to two deaths only, but the fact that nearly one-third of the youths in the establishment (29) were invalided in five months, whilst only 16 were invalided from the *Ganges* in the whole year, seems to require explanation.

PARIS.

(FROM OUR OWN CORRESPONDENT.)

The Posting of Food Prices in Paris.

ECONOMICAL buying of foods and other necessaries of life is as pressing a need to the housewife in Paris as it is in other great cities. A considerable difference exists in the prices demanded for identical articles in different parts of the city. The unduly high prices prevailing in quarters largely inhabited by wealthy foreigners are mostly due to carelessness in buying on the part of the householder, who leaves, without scrutiny, the purchase of food, fuel, and the like to servants, who, thus tempted, obtain illegitimate rebates and make unscrupulous bargains with the pettier merchants. Even dishonest bills are thus often presented to the householder, who fails to examine them and so permits the merchant and servant to divide unlawful profits. The prices of bread, milk, meat, eggs, butter, vegetables, sugar, potatoes, and other necessaries must, according to French law, be plainly posted up in view of the buyer. In this way confusion between different grades of the same article may be avoided. Extra charges for packing goods must also be plainly shown. Small merchants failing to observe the regulations mentioned are being continually fined. It would almost appear that the delinquents find it more profitable to pay the fines than to discontinue the bad practices. The vicious circles so produced are nearly always attributable to carelessness and indifference on the part of wealthy foreigners, who thus throw continually increasing hardships upon the citizens. A collateral aspect of the question is constituted by the high wages paid by foreigners to servants, who demand more than the Parisian is able to pay.

Whooping-cough.

Often in towns, and always in villages, the child suffering from whooping-cough is not isolated at home, and no precautions are taken to guard against the complications which may develop in the little patient, or to protect the other children of the family from infection. Whooping-cough is treated with contempt, because it is popularly believed to be a trivial complaint which must take its course and cannot attack adults. Further, it is the custom to send children with whooping-cough off to some friend in the country for a change of air. That is the popular estimation of the gravity of the disease, but Mr. F. Barbary, of Nice, has recently advocated that the Academy of Medicine should officially institute new and rigorous prophylactic measures. The first step would be the compulsory notification of whooping-cough, such notification at present being voluntary. The second step would be to forbid infected children to travel or mix with other children until permission was given by the doctor. The need for such measures might be brought home to the public by notices showing how whooping-cough, contrary to popular belief, can bring serious consequences, both immediate and remote, in its train. Mr. Barbary further considers vaccinotherapy to be a valuable curative and prophylactic agent in this disease.

Paris Milk.

The French Milk League, interested in improving the Paris milk-supply, has just passed a series of resolutions designed to improve the handling of milk all along the way from producer to consumer. The League especially insists on the need of clean milk for infants and young children, and on the desirability of stricter supervision of the entire dairy industry. Certain definite proposals will be presented to the municipal council by the deputy representing the quarter in which lies the Saint Louis Hospital.

Treatment of Cancer of the Rectum.

In a valuable paper on the treatment of cancer of the rectum, delivered at the recent surgical congress, Mr. Schwartz and Mr. Gaudier described the immediate and remote results of the following methods of surgical interference: (1) Abdomino-perineal excision of rectum with permanent abdominal artificial anus; (2) resection, bringing down the upper part of the rectum to form a perineal anus; (3) abdomino-perineal resection, bringing down the upper part of the rectum and preserving the anal sphincters; (4) resection by the abdominal route alone, forming artificial abdominal anus with upper part of rectum, and leaving lower part in situ after closure. The writers have further studied the respective values of surgery and radiation in the light of most recent work. Radiation treatment of cancer of the rectum has indeed made great progress during the last five years, but the results have not been so satisfactory as those obtained in treatment of cancer of the uterine cervix. Where surgery can be employed it is more valuable than radiation, and for the present, these writers hold, every case of cancer which is clearly operable should be left to the surgeon. In cases of inoperable cancer, the best results so far have been achieved by combining surgical intervention with radiation. When this combination is possible—that is, in the absence of metastases, and in patients who are neither cachectic nor too advanced in years—the method adopted should be (1) to make an iliac anus, (2) subject the patient to slow and extensive radiation, and (3) remove the cancerous growth whenever conditions permit.

The Virus of Opilaçao.

Opilaçao is a parasitic disease widely distributed among the poorer classes in Brazil, conveyed to man through the bite of a nocturnally blood-sucking hemipterous insect, the triatoma, or *barbier*. The insect occurs on the walls of dwellings. Prof. Carlos Chagas, director of the Brazilian Public Health Service, to whom we owe most of our knowledge of the disease, delivered on Oct. 23rd, at the Paris Pasteur Institute, an interesting lecture upon it, accompanied by projections. The pathogenic agent which lives in the intestine of the insect host and is highly virulent has been shown at the Cruz Institute to be a flagellate trypanosome, and it has been named *Trypanosoma cruzi*. It may infect dogs, rabbits, other laboratory animals, man, and the armadillo, the latter, indeed, serving as a reservoir of the virus. The symptoms which depend upon the organs invaded include fever, thyroid enlargement, degeneration of muscular fibres, cerebral reactions, and other effects. In dogs the signs are mainly paralytic. Like the treponema, the trypanosome may be transmitted from mother to embryo.

Congress on Stomatology.

This congress, which met from Oct. 19th to 24th, devoted much of its time to pyorrhœa. Dental bridges, vaccination, radiography, the ultra-violet rays, masseteric anæsthesia, anæsthesia of the inferior maxillary nerve trunk, and prosthesis were other subjects of interest discussed.

VIENNA.

(FROM OUR OWN CORRESPONDENT.)

Resignation of Prof. F. Chvostek.

Dr. Franz Chvostek, the head of the Third Medical Clinic of Vienna, and professor of internal medicine, has tendered his resignation to the Ministry of Education, an action which has caused surprise and dismay to his numerous friends and patients. It is the more surprising as Dr. Chvostek previously resigned this office several years ago, but at the earnest request of the Ministry he withdrew his resignation and continued his work under more favourable personal conditions. Once again all efforts are being made to induce him to remain in office, and the Senate of the University has added its plea to that of the Educational Board. The third clinic, of which Prof. Chvostek was the chief organiser, has been a source of most useful scientific research ever since the work was started some 20 years ago. It may be added that the third clinic, which is still situated in the old General Hospital of Vienna, is very much handicapped by the limited space available for it in the ancient building.

Changes in the University Teaching Staff.

The well-known orthopædic surgeon Prof. Adolf Lorenz definitely resigned his professorship last spring, and Prof. Hans Spitzy has been appointed to the directorship of the University Orthopedic Ambulatorium, as it is officially termed. As successor of Lorenz, Prof. Spitzy is at present at the head of the famous orthopædic hospital in the fifth district of Vienna—the biggest of its kind in Central Europe—where he has built up a model institution for the cure, after-care, and re-education of war-crippled soldiers, that compares favourably with any other such institution in the world. The tradition of the Lorenz clinic—which is well known to American doctors—will be continued by Docent Dr. Julius Hass, the first assistant of Lorenz. He has been appointed director to an orthopædic ward and will take over this office shortly.

Closure of the Third Obstetric Clinic.

It is understood that the third obstetric clinic (Prof. Ludwig Piskacek) will be closed shortly, and with it the oldest teaching institute for midwifery in Austria, an event which means a marked diminution of the teaching facilities of Vienna. The third clinic was never intended for instruction of students, but many doctors obtained there very good post-graduate instruction, and had a chance of serving a term or two as house surgeons in the institute, thus obtaining excellent opportunities for obstetric practice. In future midwifery will be taught in the remaining two gynæcological clinics, where also the regular clinical lectures and courses for students are given.

Meteorological Conditions and Human Health.

In a lecture delivered before the Medical Society Prof. Julius Bartel discussed the influence of climatic—or rather meteorological—conditions upon the mortality statistics, giving extensive statistics and figures. Prof. Bartel's conclusions are worth consideration. He emphasises the inadequacy of our present knowledge of the climatic factors, which is obtained from post-mortem examination only, but even this is sufficient to prove that these factors have a very considerable influence on the daily mortality curve. Consideration of the constitution of the individual also shows us that the incidence of death is due not only to nature of the illness, its ætiology, and the constitution of the patient, but also to a fourth factor—namely, atmospheric conditions, such as barometric pressure, temperature, humidity, and winds. Analysis of individual cases, and control by autopsy, enable us to discern certain rules, but further research from the point of view of the clinician is very much needed. At present we can say that arteriosclerosis and tuberculosis respond to climatic changes, and the status lymphaticus usually reacts to barometric variations. It is also well known that suicides are much more frequent between April and July than in the autumn or winter. Perhaps mental conditions react differently at various periods of the year and under different weather conditions. Greater difficulty is encountered in considering the effect of climatic variations upon the "healthy" or the "apparently healthy" organism. Health and disease are only stages, very nearly related, and the susceptibility to weather factors makes itself manifest not only in the individual, but also in the masses, in the political, and social reactions of mankind.

Modern Treatment of Lupus.

At a recent meeting of the Vienna Medical Collegium Prof. Richard Volk read a paper on the treatment of lupus. He commenced with a survey of the older methods used before the advent of electrotherapy. The surgical excision of the diseased parts, immediately followed by grafting (Lang's method) was, he said, fit only for a small percentage of cases. Scraping, cauterisation, thermocautery were no longer advocated, though galvanocautery might still be applied with good results in lupus of the mucous membranes. High-frequency currents might be used for solitary nodules in the skin. The exhibition of the various tuberculins, emulsions of bacilli, had not given the satisfaction it promised at first. Chemotherapy (copper, krysolgan, salvarsan) given alone had also failed; only erythematode lupus seemed to respond favourably to krysolgan. Pyrogallol and resorcin were merely adjuvants in phototherapy as now employed for the hypertrophic and ulcerous forms of lupus. X ray treatment gave very good results, and the application might be repeated several times, a medium dosage being given. When the hypertrophic form had been transformed into a "plane" or "flat" stage, Finsen light or mercury-vapour lamps are used. Finsen laid great stress on the use of the pressure lens. Prof. Volk, however, preferred to work without the pressure lens and got better results. This method is also much more rapid and economic. General irradiation of the whole body by artificial or natural sunlight was a most useful help; of course, it was necessary to attack any coexisting tuberculous affection, such as glandular, mucous, or osseous manifestations of the disease, as well as pulmonary tuberculosis. Constant supervision and control of the patients for many years was of paramount importance to avoid relapses. The application of radium or of Ponndorf's vaccines was also useful, especially in localisations on the mucous membranes, but only in selected cases, and one must be on the look-out for possible untoward results, such as telangiectasis or hyperkeratosis.

Reorganisation of the Dental Classes of the Medical Faculty.

The new University term opened recently, and a serious shortcoming in our medical instruction has been removed by the new regulations pertaining to dental teaching of doctors. Having obtained the degree of M.D., the applicant desiring to practise dentistry will have to spend four semesters (half-years) at the institute of dentistry of Vienna. The curriculum comprises theoretical and practical instruction, and consists of classes on conservative, surgical, and prosthetic dentistry, including orthodontic and technical work in the practical laboratory. After the four semesters every student has to pass oral, written, and practical examinations. Hitherto our dental surgeons went, as a rule, to Germany to get their up-to-date experience in dentistry.

MEDICINE AND THE LAW.

Limitations of Actions against Public Officers.

Parliament has wisely recognised the fact that public servants cannot discharge their duties satisfactorily unless reasonably relieved from personal liability. In England and Wales the Public Health Act of 1875 protects local authorities, their members, and officers in this respect. The Public Authorities Protection Act of 1893 usefully enacts that no action is to be commenced against anyone for anything done in pursuance of an Act of Parliament or in intended execution of a public duty unless the proceedings are commenced within six months. The Public Health (Scotland) Act of 1897 goes further. It fixes a time limit of two months as the period after which no proceedings shall be begun against persons performing duties under the Act. The value of this protection is illustrated by a recent Edinburgh case (Gorrie *v.* Smith), where a doctor was sued in the Court of Session in connexion with the death of a patient treated at a venereal diseases centre in Glasgow. The claim arose in the following way. The claimant's wife, nursing a baby 3 weeks old, found the child apparently suffering from cold in the eyes. Dr. Elizabeth Chalmers Smith, in charge of the local child welfare clinic, prescribed an ointment and at the same time advised the mother to visit the dispensary at Black-street, Glasgow, which is an approved centre for the treatment of venereal disease. Dr. Smith had provisionally diagnosed the case as one of syphilis and she naturally wished the mother's blood to be tested. She did not inform the patient of her opinion, but gave her a sealed letter addressed to Dr. Elizabeth Helen Smith, the doctor in medical charge at Black-street. On August 6th last year the mother attended at Black-street with her baby. The provisional diagnosis was confirmed. The mother was questioned and examined, and, as a result, she was informed that her child was suffering from "poison in its blood." It was suggested that an injection should be administered which would benefit the child; it was added that an injection would act as a tonic to the mother herself. The doctor also proposed to take a sample of the mother's blood for test purposes. The mother assented to the treatment and a first injection was administered. A week later she again attended at Black-street with her child and received a second injection. She was informed that the test showed nothing. Soon after she returned home she became ill; she was removed to the infirmary and died a few days later on August 17th.

Lord Murray dismissed the action with costs. His decision was based upon the primary point that death had occurred in August and legal proceedings had not been begun until the following January, many weeks after the two months statutory time limit under the Public Health (Scotland) Act had expired. On behalf of the husband, who claimed £2000 reparation against Dr. Elizabeth Helen Smith for the loss of his wife, an interesting argument had been put forward in the endeavour to circumvent the statutory limitation which otherwise manifestly barred his claim. First, it was contended, the dead woman had not herself been a patient at all. Secondly, as she was never made aware of the diagnosis, she could not be regarded as a voluntary patient for the purpose of venereal disease treatment under the Public Health Act, so as to bring the doctor within the protection which that Act confers. Lord Murray could not accept this view. It was clear, he said, both on the admitted facts and on the documents that mother and child were alike patients. It was a case of derivative treatment and the position of the mother and the child could not be severed. He refused to hold that one and the same proceeding on the part of a medical practitioner, when plainly intended as a performance of a statutory duty, could be within or without the protection of the Act according to the precise state of knowledge of the patient as to the particular character of the disease diagnosed.

The sympathy naturally felt towards the husband in this particular case need not obscure the conclusion that such measure of protection as the Scottish Public Health Act affords was never more essential to the medical practitioner than in relation to the difficult and delicate duties performed at centres for the treatment of venereal disease. In some respects it is unsatisfactory that the medical facts of the case were not fully examined in court owing to the claim being dismissed on the preliminary ground of the statutory protection. For the claimant it was stated that both he and his first child had always been healthy and free from disease and that blood tests of himself and his two children, taken since the wife's death, had all shown negative results. The learned judge was careful to point out that there was no evidence before him as to the precise cause of death. He expressly refrained from giving any opinion or making any finding on this head. The facts were not before him. It is only fair to Dr. Smith to point out that the case ending as it did upon the preliminary objection in law, not only was there no finding that she was in any way at fault, but no opportunity arose for her to make any answer to the allegations upon which this unsuccessful claim was founded.

ST. THOMAS'S HOSPITAL WAR MEMORIAL.

The Duke of York on Nov. 2nd laid the foundation-stone of the College House Extension and Students' Memorial which is being built in connexion with St. Thomas's Hospital and Medical School. The building will be on the opposite side of Lambeth Palace-road to the hospital and will contain club rooms for students and 72 bedrooms; 12 of these will be reserved for members of the resident staff of the hospital, and the remainder will be let to junior students and others. The cost of the scheme, including the purchase of the site, will be £58,000, towards which the Medical School is raising a fund of £10,000. Sir Arthur Stanley, in welcoming the Duke of York, traced the interest in the hospital which had been taken by the Royal House from the days when Edward VI. restored it to the rights and privileges, and some of the property, which his father had taken away. Queen Victoria had laid the foundation-stone of the new buildings in 1868. Sir George Makins said that in the war 1481 of those connected with the hospital had joined up, including 214 members of the nursing staff, and of the whole number 81 had died. It was felt that no form of monument would bring the memory of those who gave their lives more constantly before the future members of the school than the provision of quarters which would be their home whilst they were working in school and hospital. The provision of this hostel was also an indication of the gradual conversion of the University of London, of which the school was a constituent college, from a purely teaching and examining body to a complete university with residential accommodation for its students. The Duke of York laid the foundation-stone with the same level as was used by Queen Victoria. The religious part of the ceremony was conducted by the Bishop of Southwark and the Hospitaller, and a guard of honour was furnished by the medical unit of the University of London O.T.C.

The late Mr. Herbert H. Folker, O.B.E.—Mr. Folker, who died on Oct. 20th in his sixty-second year after a long and painful illness, was a well-known North Staffordshire surgeon. The son of a medical man, he was educated at the Newcastle High School and at Epsom College, studied medicine at Charing Cross Hospital, and qualified in 1889 with the M.R.C.S. Eng. and the L.R.C.P. Lond. Returning to Staffordshire, he commenced practice at Shelton, and later succeeded his father as certifying surgeon under the Factory Act for the Hanley district. Mr. Folker, who took a prominent part in the movement for the compulsory notification of ophthalmia neonatorum, was appointed hon. assistant ophthalmic surgeon to the North Staffordshire Infirmary in 1892, ophthalmic surgeon in 1894, and hon. consulting surgeon in 1914. On the outbreak of war he joined the R.A.M.C. and did good service in various districts of Yorkshire, Derbyshire, and Nottinghamshire. He leaves a widow and a married daughter.

Public Health Services.

REPORTS OF MEDICAL OFFICERS OF HEALTH.

THE following are some of the health statistics of six counties for the year 1924 :—

Name of county.	Estimated mid-year population (R.-G.).	Birth-rate.	Death-rates per 1000 of the population.				Death-rates per 1000 births.		
			All causes.	Tuberculosis.	Cancer.	Resp. diseases with influenza.	Neonatal mortality.	Infant mortality.	Maternal mort. from childbirth.
Somerset	398,300	16·3	12·3	0·80	1·40	2·3	30	54	3·7
Derbyshire. ..	607,600	20·7	11·0	0·78	0·99	2·3	34	70	3·9
Lincolnshire, parts of Lindsey	259,900	19·7	11·8	0·98	1·38	2·1	29	60	3·9
Hertfordshire ..	344,200	16·0	10·6	0·77	1·45	1·9	29	51	3·3
East Sussex ..	258,600	14·0	11·8	0·87	1·74	1·9	29	48	3·3
Cumberland ..	221,010	20·3	13·0	0·89	1·23	2·5	32	72	5·2

Somerset.

Dr. W. G. Savage reports an increase in the deaths from influenza and the diseases of the respiratory system ; the 268 deaths from influenza represent an increase of 202 over those of 1923. A table of the deaths at various age-groups during the last nine years shows that the deaths over the age of 65, which in 1911 formed 45·3 per cent. of the total, accounted for 53·6 per cent. in 1924. Twenty-five cases of ophthalmia neonatorum were notified, and there were 61 cases of encephalitis lethargica with 15 deaths, as compared with 8 cases and 3 deaths in the previous year. A special report on the mental impairment of affected school-children has been made to the Board of Education. No propaganda work with regard to venereal diseases was carried out during the year, and Dr. Savage considers that it is very difficult to arouse interest in this subject treated by itself and that it is best dealt with in courses of instruction on social hygiene along with other health matters. As regards tuberculosis he reports as unsatisfactory the fact that of 550 new cases of pulmonary tuberculosis 38 per cent. were detected in the early stage of the disease, 39 per cent. in the second stage, and 22 per cent. in the third stage and practically incurable. The percentage of contacts who attended the dispensary for examination was about 20, the figure for 1923 being 26. About 32 per cent. of the contacts of pulmonary cases showed suspicious or definite signs of tuberculosis. The new sanatorium at Quantock Lodge was not available for patients till June, 1925, and some of the buildings were used to house a holiday camp for 40 girls and 40 boys suffering from general debility and malnutrition. There were 973 new houses, compared with 648 in the previous year. In spite of urgent need, however, only 31 houses were built in Bridgwater, and in agricultural areas there has been little building. Dr. Savage refers to the subletting of parlour houses, and cites the example of the council houses in Weston-super-Mare. Of 118 houses, completed in 1922, 73 are occupied by one family, 44 by two families, and one by three families. In three instances the rent and rates were 15*s.* 6*d.* per week and the sub-tenants paid 9*s.*, 7*s.*, and 10*s.*

At Weston-super-Mare, Clevedon, and Minehead there are public slaughter-houses only, but in the rest of the county there are 350 private slaughter-houses. The new meat regulations require slaughtering to be done at fixed times or after due notice. The value of these regulations, says Dr. Savage, will largely depend upon the experience and knowledge of the sanitary inspectors, only a few of whom hold a meat certificate and some of whom have had no training in meat inspection at all. To make the new regulations of practical value facilities must be available for these men to have revision courses in meat inspection. The majority of the county's 5299 registered milk producers are taking a much greater interest in clean milk production. The control in rural districts is very unequal. In some districts the officials give only perfunctory supervision, while in other districts, such as Axbridge and Langport, much attention is being given to the work, and considerable improvements in equipment and methods are being secured. During the year there have been 32 milk demonstrations at various farms, and in the milk competition of 1924–25 30 of the competitors in the fourth series of tests attained the standard of Certified Milk, 22 that of Grade A, and only 14 failed to reach Grade A. The graded milk movement does not make much headway. At the end of 1924 there was one producer of Certified Milk, one of Grade A (tuberculin tested), and two of Grade A.

More antenatal work is being done. Cards are supplied to the midwives for recording the results of visits paid before birth. Examinations of urine, &c., are made for midwives, free of cost, in the county laboratory. Further steps have been taken to distribute leaflets to expectant mothers and the facilities for granting milk to them have been extended. Tables are given showing that over 66 per cent. of the babies 3 to 4 months old are entirely breast-fed in the rural districts and about 60 per cent. in the urban districts. The percentage of 1924 births attended by trained midwives was 50·8 and by " bona-fide " midwives 3·7. The remainder were attended by medical men, with the exception of a small proportion attended by uncertified women. The trained midwives sent for medical aid in 23 per cent. of their cases, the " bona-fides " in 12 per cent.

Derbyshire.

Dr. W. M. Ash presents the report for 1924, but only took up his duties as county medical officer on June 1st, 1925. There has been an increased prevalence of small-pox of a mild type. There were 1123 notifications, with one death in the Chesterfield district. The council has still no facilities in the county for the institutional treatment of surgical tuberculosis, but preparations are being made to provide 50 beds at Bretby Hall for the treatment of early cases of bone and joint tuberculosis in children. Of 320 deaths from tuberculosis notified by the local registrars to the county medical officers of health 120 were not notified under the public health regulations before death, 51 were only notified within four weeks before death, and 44 during the second month before death. At the end of 1924 there were 127 shelters lent out to tuberculous cases ; inspection showed that 111 were being used in a satisfactory manner and the others were not being used. The tuberculosis officer, Dr. A. N. Robertson, reports a great need for a 20 to 30-bed pavilion for advanced female cases. Most of the new " cures " are tried at the sanatoriums, but hitherto with unsatisfactory results. Dr. Robertson considers that artificial pneumothorax " is most required in an advancing toxic case of recent onset, which has not responded to three months absolute rest in bed and where the disease is mainly unilateral and the lung is breaking down, causing high fever and rapid pulse." Chronic unilateral cases of long duration with shrunken chest do not urgently require such treatment, and the adhesions frequent in such cases prevent it being successfully carried out. Dr. Robertson's experience of the after-history of large numbers of such cases is that they often do quite well without this special treatment. Five new cases were started on the treatment during the year and it was continued in four old cases. " One can positively say that by its use in picked cases a dying man can be changed in a short time into a comparatively healthy, happy individual." Dr. Robertson does not approve of beds being used for the education of advanced cases, and advocates that the education process be carried out at the home. The beds are urgently needed for early cases and the high mortality among the advanced cases after discharge gives a bad impression of the curative power of the sanatorium. After an average of ten notifications of encephalitis lethargica during the last three years there was an increase in 1924 to 84 notifications with 23 deaths. Out of 32 cases among school-children 7 died, 1 left the county, 8 showed no sequelæ, 9 showed slight or severe mental changes, 1 some physical deterioration, and 6 the Parkinsonian syndrome.

Lincolnshire (parts of Lindsey).

Dr. R. Ashleigh Glegg points out defects in the tuberculosis scheme. Many advanced cases are allowed to remain at home, partly cured cases return to insanitary homes, and there is great lack of an orthopædic scheme to prevent children being crippled by tuberculosis of bones and joints. He recommends the establishment of a central hospital with a specially trained staff and X ray department, to be fed by out-patient clinics conducted in the various districts by the hospital staff.

Dr. Annie T. Brunyate makes many recommendations for the improvement of the maternity and child welfare scheme, which are all endorsed by Dr. Glegg. More maternity homes are needed. The usefulness of the antenatal clinic at Scunthorpe will be much increased by the opening of a new six-bed home there. An antenatal clinic was opened at Gainsborough in October and one will shortly be opened at Cleethorpes. The staff of health visitors needs to be increased in order to cope with the work, and the alternative is suggested of providing them with motor-bicycles instead of push bicycles. Dr. Brunyate points out that a health visitor at the end of an exhausting day of travelling by push-bicycle cannot have the same interest in the mother nor exert the same power of persuasion as at the beginning of the day. This is so evident to the nurses that several of them have managed to run motor-cycles or light cars to their own pecuniary loss, but to the great benefit of their work. Courses of post-graduate lectures for midwives were given during the winter at Lincoln, Cleethorpes, and Scunthorpe.

Hertfordshire.

Dr. H. Hyslop Thomson states that the maternity and child welfare scheme includes both official and voluntary effort. There are 13 county council centres, 13 voluntary centres, and 9 voluntary weighing centres. Maternity beds are provided at Hertford, Hitchin, Hemel Hempstead, and Watford. There is a convalescent home at St. Leonards, and there are orthopædic, massage, and dental clinics. There is much need for additional dental clinics at Hertford and Bishop Stortford. Commenting on the increased number of deaths of infants during the first weeks of life, Dr. Thomson stresses the need for antenatal work. The births in the county numbered 5496 and only 258 expectant mothers attended the council centres. In 1923 the number was 200. Special efforts have been made to search out the mental defectives in the county, through the medium of Poor-law authorities, school attendance officers, medical practitioners, and nurses. Parents sometimes withhold information owing to the fear of their children being removed to a special school or institution. This difficulty would in time be met by the provision of an institution to which parents had easy access. The absence of adequate accommodation in certified institutions, more especially for low-grade and complicated cases, is sometimes seriously felt. A certified institution is needed which would provide accommodation for three types of case of both sexes—namely, employable, unemployable, and hospital cases. Such an institution should be so constructed as to allow for future expansion and should provide facilities for the training and employment of defectives in various occupations.

East Sussex.

Dr. Alex. G. R. Foulerton reports that the scheme for coördinating the county council's health nursing work with the general nursing, by close coöperation with the East Sussex Nursing Federation, continues to work very satisfactorily. Infant visiting under the county scheme is carried out by the nurses of the District Nurses Association, and there are only eight parishes, with a total population of about 5000, which are without the services of a district nurse. Good progress has been made with the assistance of the East Sussex Voluntary Association for the Blind in providing for the more pressing needs of the necessitous blind in the county. The recently made register of the last named includes 260 persons. In addition the county education committee provide education in special schools for blind children under 16 and secondary or technical education for certain blind persons over the age of 16 who are likely to benefit thereby.

Cumberland.

Dr. F. H. Morison reports that although the infant mortality of the county has decreased to 72, it remains in five of the urban districts at over 100. Cockermouth had an infantile mortality of 131 in 1924 and 132 in 1923. Dr. A. H. Towers, in his account of the work of the clinics at Cleator Moor and Millom, comments strongly on the ill-health of some of the mothers. He says that in these districts the poorest and most ill-nourished infants are those which are being breast-fed, and the full effect of continued unemployment, poor feeding, and housing is there seen. "The average mother is quite unfit to feed an infant by the breast; it is quite a common occurrence for mothers to arrive at the clinic markedly dyspnœic and cyanosed, with tachycardia and general cardiac irregularity, and anæmia is found to be intense." Under such conditions, he says, the infant is deriving no good from breast feeding, while the damage to the mother's health is profound. On weaning the improvement in the infant is obvious, but the mother living under these conditions only recovers slowly. At Cockermouth there is no infant clinic, but there are clinics at two other districts which have infant mortalities of 100 each—namely, Egremont and Arlecdon-cum-Frizington. 186 cases of small-pox were notified in the county during 1924 with no deaths. The Englethwaite Industrial Colony for consumptives is to be closed at an early date and its conversion into an institution for delicate children is under consideration. The average number of beds occupied at the colony during the year was 33, and there has been less demand for the beds on the part of ex-Service men with pensions. The net cost of the colony during the year, after allowing for payments for ex-Service men, receipts from the market garden, poultry farm, clog making, and joinery and all other credits was about £4000.

INFECTIOUS DISEASE IN ENGLAND AND WALES DURING THE WEEK ENDED OCT. 24TH, 1925.

Notifications.—The following cases of infectious disease were notified during the week:—Small-pox, 67; scarlet fever, 2602; diphtheria, 1240; enteric fever, 65; pneumonia, 965; puerperal fever, 43; cerebro-spinal fever, 5; acute poliomyelitis, 11: acute encephalitis, 4; encephalitis lethargica, 42; dysentery, 8; ophthalmia neonatorum, 115. There were no cases of cholera, plague, or typhus notified during the week.

Deaths.—In the aggregate of great towns, including London, there were 4 deaths from enteric fever, 25 from measles, 11 from scarlet fever, 15 from whooping-cough, 38 from diphtheria, and 41 from influenza, the last named being a slight decrease from the previous week. In London itself there were 10 deaths from diphtheria, 1 from whooping-cough, 8 from influenza, and 31 deaths of infants under 2 years of age from diarrhœa and enteritis.

SCHOOL MEDICAL SERVICE.

THE following is a summary of the reports of school medical officers:—

Name of district.	No. on roll.	Av. elem. school attendance.	No. of routine children examined.	No. of special examinations and re-inspections.	Percentage of children found on routine examination requiring treatment.*
Cambridgeshire C.C. ..	9,897	8,993	2,927	5,979	11·6
Gloucestershire C.C. ..	41,022	—†	11,805	8,298	37·8
Durham C.C.	—†	125,183	39,235	18,113	24·8
Northumberland C.C. ..	—†	—†	14,937	11,725	20·09
Lindsey C.C.	39,018	—†	11,651	6,651	15·95

* Excluding dental defects and uncleanliness. † Not given.
C.C. = County Council.

Cambridgeshire.

Dr. F. Robinson gives interesting figures showing the gradual decrease in malnutrition from 19·4 per cent. in 1914 to 4·1 in 1920, and the rise again to 11·8 per cent. in 1924. The nutritional standard of the school-children apparently varied directly with the wages and state of employment. Cod-liver oil is supplied to all ill-nourished children, but only a few of the worst cases of malnutrition are sent to the residential open-air schools run by neighbouring authorities. The standard of cleanliness is apparently satisfactory, though no cleansing surveys are carried out by the district nurses who act as school nurses. The teeth of all children from 5 to 14 years were inspected and only 36·2 per cent. were found to require treatment, and of these 65·1 per cent. actually received it. The necessity for adopting some scheme for orthopædic treatment is stressed, as is also the need for appointing a physical training instructor. No special classes or schools are run for abnormal children, but it is hoped to start some classes for backward children in the near future. Strong comment is made on the unhygienic state of many of the non-provided schools.

Gloucestershire.

In addition to "cleansing surveys," much home treatment is given in the outlying districts by the district nurses who carry out the school duties, and Dr. J. Middleton Martin points out there has been a 60 per cent. reduction of pediculous heads since the inception of the school service in 1908. In the same time defects of the nose and throat have been reduced by 30 per cent., largely owing to the increased attention given in early life. A beginning has been made in the orthopædic treatment of physically defective children. One of the surgeons from the Cheltenham General Hospital visits neighbouring schools and it is hoped that further provision will shortly be made. A few schools make their own arrangements for feeding necessitous children but no official provision is made, and Dr. Martin rightly deplores the absence of any open-air schools in the county. 60 per cent. of the children examined (6 to 9 years inclusive) required dental attention and of these 70 per cent. obtained treatment. No special provision is made for physically or mentally defective children.

Durham.

Dr. Sydney Havelock, the deputy school medical officer, in the absence of the school medical officer, Dr. T. Eustace Hill, presents a well-written and interesting report. He rightly states that one dental officer can only touch the fringe of the dental work in a county like Durham, and urges the necessity for open-air school provision and for the adoption of an efficient orthopædic scheme, &c. Arrangements are now being made for a definitely organised scheme for operative nose and throat treatment. Interesting features are the short extracts of reports from the assistant school medical officers on the actual conditions found at the examinations; these are essentially of more value than the mere recording of statistical data. Dr. Lance Stanton-Cook calls for the earliest possible treatment of squint, and makes a strong plea for the employment of an oculist in the child welfare scheme. Dr. H. G. Donald definitely associates the prevalence of threadworms with defective personal and general hygiene. To see toddler children and pet dogs engaged in a necessary part of their toilet in the street, where later will be the mud-pies, is to solve the mystery of the method of conveyance of the eggs of the oxyuris. Dr. Lillie Johnson finds that healthy girls who take regular exercise suffer no disability during the menstrual periods. Institutional care is found for most of the blind, deaf, and epileptic children, while the council provides a residential school for mentally defective children.

Northumberland.

Apart from a few remarks on nutrition, Dr. W. F. J. Whitley confines his report mainly to the statistical returns required by the Board of Education. It is thought that since only one whole-time and one part-time dentist are employed, the medical inspectors could keep the dentists fully employed in treatment and do away with the necessity for dental inspections. The assistant school medical officers referred for treatment 2293 children with four or more carious teeth, but only 1414 children received treatment, apart from 600 re-treated during the year. The value of the statistical dental return must be negligible in comparison to the waste of the dentist's time. The numbers of exceptional children in the county appear very small; for instance, there are only 138 feeble-minded and 114 crippled children. No special provision is made by the council for such children. Dr. O'Connell O'Sullivan concludes that the malnutrition existing in the children is due to defect in the quality rather than the quantity of food; and Dr. W. L. M. Gabriel has drawn up an interesting table showing the relation of weight to height at various ages, and compares the results with similar data from Newcastle, from the Anthropometric Report of 1883, and from Detroit, U.S.A.

Parts of Lindsey (Lincoln).

Dr. Ashleigh Glegg stresses the value of coördination between the various branches of the public health activities. It is an advantage for medical officers and nurses to meet parents in more than one capacity, but we do not like the idea of associating the nurses with the work of the attendance officers. Commenting on the dirt and dust brought into the schools, Dr. Glegg suggests the children should change into slippers at school. This is an ideal not easily attained. Favourable comment is made on a dust-allaying preparation, to which a trial has been given. Interesting account is given of the working of the open-air schools, and "the newest schools now in course of construction . . . can, if desired, be thrown open entirely to the fresh air." There are no institutions for the blind, deaf, mentally or physically defective children in the area, but for the great majority of the blind and deaf outside accommodation has been found. The difficulty of providing special schools in rural areas is recognised, but a step in the right direction would be the establishment of special classes at the bigger centres. The adoption of an orthopædic scheme is now being considered. An inquiry into the alleged decadence of the rural child showed that in Lindsey the country child compares favourably with the town child.

ROYAL SOCIETY OF ARTS.—A conference will be held at John-street, Adelphi, W.C., on Monday, Nov. 9th, from 5 to 7 P.M., Sir Francis Champneys in the chair, when the subject for discussion will be How the Midwife can Help in the Reduction of Maternal and Infantile Mortality. The principal speakers include Dr. John S. Fairbairn, Miss E. M. Doubleday, Lieut.-Colonel Fremantle, and Sir John Robertson.

Correspondence.

"Audi alteram partem."

UNIVERSITY COLLEGE, LONDON: A CENTENARY APPEAL.

To the Editor of THE LANCET.

SIR,—May we ask the hospitality of your columns for an appeal issued under the patronage of H.R.H. Prince Arthur of Connaught, and the vice-patronage of the Chancellor of the University of London, the Earl of Rosebery, for £500,000 to enable University College, London, upon the completion of the first hundred years of its work, to start unhampered upon its second century?

The foundation-stone of University College was laid in 1827, after two years of preparatory work following upon the famous letter of Thomas Campbell to the *Times* of Feb. 9th, 1825, in which the foundation of a University of London was first proposed. The object of the new University was to give education without regard to class or creed, and more particularly in a large number of new subjects, which did not at that period form part of the ordinary University curriculum. In the words of an early report: "It was for a class of sciences, the knowledge of which is not profitable to the possessor in a pecuniary point of view, but which exact a great influence on the well-being of society, that such an institution was required."

If this work is to continue, on the scale which the present century demands, a sum of at least £500,000 is urgently necessary. Of this total £225,000 is needed for the endowment of teaching; other urgent needs are the provision of a great hall, the reconstruction and endowment of the libraries, and the completion of the engineering equipment. The laboratory teaching of engineering is one of many subjects in which University College has done pioneer work.

University College was the first of that group of new universities which have now spread, not only through England, but to all parts of the Empire. But, owing to its position as the oldest and largest College of the University of London it must always possess peculiarly heavy obligations and responsibilities. We appeal with confidence to all citizens of London and of the Empire to help it to discharge those obligations in a manner worthy of the Empire in the capital of which it is stationed.

Donations, large or small, can be sent to Sir Robert Kindersley, G.B.E., hon. treasurer of the Centenary Appeal Fund, at University College, London, from whom the complete appeal document can be obtained.

We are, Sir, yours faithfully,

CHELMSFORD,
Chairman, University College, London.
E. A. GARDNER,
Vice-Chancellor, University of London.
MESTON,
Chairman, Appeal Committee.
R. M. KINDERSLEY,
Treasurer, Appeal Committee.
W. SETON,
Hon. Secretary, Appeal Committee.

Gower-street, London, W.C. 1, Oct. 28th, 1925.

X RAYING OF TEETH.

To the Editor of THE LANCET.

SIR,—When a physician of reputation and position writes in criticism of any method of investigation, such a communication naturally commands respect. Sir Gould May criticises the common and routine examination of the teeth by means of X rays, and draws, in my opinion, certain unfair adverse conclusions.

Now if, as he says or implies, it is so easy a matter for a dental surgeon to give a definite opinion on the condition of the teeth, or that part of the tooth which is invisible, why are so increasingly large numbers of dental surgeons going to the expense and trouble of equipping themselves with X ray apparatus? I had been of the opinion that X ray examination was advisable in certain broad classes of case. First, cases referred by the dental surgeon himself, in order to demonstrate with precision the exact condition of a root and its socket; secondly, cases referred by a surgeon, preliminary to any operation of magnitude, in order to eliminate any possible latent source of infection.

In a very large number of such cases, contrary to Sir Gould May's suggestion, the radiologist is able to report favourably. I had looked upon the above as evidence of extreme care on the part of the surgeon, and Sir Gould May's criticism, if correct, is disconcerting. Nevertheless, for my part, I should prefer to be operated upon by a surgeon who errs on the side of extreme caution.

I am, Sir, yours faithfully,

STANLEY MELVILLE.

Chandos-street, Cavendish-square, W., Nov. 2nd, 1925.

To the Editor of THE LANCET.

SIR,—The question raised by Sir Gould May in your last issue is one that, as indeed his letter indicates, concerns not only the general physician and surgeon, but also the specialists in almost every branch of medicine and surgery. An unbiased observer of our profession and its ever-changing doctrines will note that, whenever a new "craze" arises there are always those who support it and those who condemn it as new-fangled nonsense. The former are often to blame for lack of judgment and critical powers, the latter for not taking the trouble to understand the point at issue.

I suppose there is no subject in medicine on which more nonsense has been written and said as on what is commonly known as "the theory of focal infection"! To begin with, it has always been a mystery to me why it should be called a theory. A patient, let us say, has a mass of tuberculous glands in the neck, or a tuberculous focus in one lung; he then develops tuberculide skin lesions, or renal tuberculosis, or spinal caries. It is hardly theoretical to attribute these secondary complications to infection, via the blood stream, from the primary focus. Yet if one is dealing with a patient who is obviously suffering from a non-tuberculous chronic infection, and one tries to locate the main closed foci, from which invasion of the blood stream with toxins or bacteria may be taking place, one is condemned as a victim of "the theory of focal infection"! I cannot personally see any difference between X raying the teeth or the maxillary antra, and having the urine examined for bacilluria, or the Wassermann reaction performed. To my cost, I have in the past accepted the opinion of dental surgeons, whom I did not know, that "the teeth are all right." In one such case I wasted two years of a patient's life for this reason; she had the most extensive apical infection of the teeth with invasion of bone, and I have never seen a more dramatic change in a person's appearance than occurred after removal of the teeth and scraping away the diseased bone. Unfortunately in patients with chronic streptococcal infection it is not, as a rule, a question of locating one or more accessible septic foci, for such cases often have a diffuse infection of the nasopharyngeal and intestinal mucous membranes, to say nothing of closed foci in lymphatic glands. Unless everything possible is done *after* the removal of obvious accessible foci to raise the patient's resistance to his infection by means of an out-of-door existence, heliotherapy, autogenous vaccine treatment, and a suitable diet, disappointment is bound to result in the majority of cases, and such after-treatment is often impracticable. It is the actual infecting organism and the patient's resistance to it that are the important factors, and they are often entirely neglected even by those who admit the importance of focal sepsis. Sir Gould May's contention that continental medical men do not attribute the same importance to focal infection from the teeth as we do is, in part, true, although the most exhaustive treatises on the effects of pyorrhœa are by French authors. But if we are to be accused of being crazy on this subject, the French can with equal justification be accused of being crazy on hereditary syphilis and tuberculosis.

In conclusion, I would say that the last three reports I have received from dental radiologists stated that there was no evidence of infection of the teeth; and that, even if there is obvious dental sepsis, I do not advise extraction unless I consider the patient's condition warrants it, for artificial teeth can never be an effective substitute for the real article.

I am, Sir, yours faithfully,
H. W. BARBER.
Devonshire-place, W., Nov. 2nd, 1925.

To the Editor of THE LANCET.

SIR,—It would be interesting to know on what experience Sir Gould May bases his remark that "everyone whose apparently sound teeth are X rayed is said to have diseased ones." Simple inspection of a tooth does not reveal the presence of a root abscess, and many sufferers from maladies, undiagnosed by eminent specialists, are relieved when X rays expose a septic focus and an offending molar is removed. Sir Gould May's informant on the continental attitude to this question is in error, for in the Zentral Röntgen Institut in Vienna there is a special section devoted to the study of teeth alone, with results which well satisfy the Viennese doctor. Taking the line of argument adopted by Sir Gould May, it would be just as competent for the radiologist to urge the physician to give up percussing the chest and to relegate his stethoscope to the dustbin. The argument in his case would be even stronger, for physical signs in diseases of the lungs reveal very superficial infiltration, leaving it for the radiologist to discover the more deep-seated mischief. It is not in this way that progress in medicine is made.

I am, Sir, yours faithfully,
PETER KERLEY, M.B., Ch.B. (N.U.I.),
D.M.R & E. Camb.,
Zeugnis der Universität (Vienna).
Richmond, Surrey, Nov. 1st, 1925.

STANDARDISATION OF BACTERIAL VACCINES.

To the Editor of THE LANCET.

SIR,—I am doubtless not alone in welcoming Major Brown's method of making the standardisation of vaccines a more certain procedure as outlined in his letter in your issue of Oct. 31st. Admittedly, the ordinary opacity method such as Gordon's is a rough and ready procedure, but I am sure it does compare quite favourably with any counting method. Apart from cholera vibrios, the opacity is the thing we want, if we cannot have weight, for it is the amount of bacterial substance that matters. Counting methods can take no stock of autolysed organisms, and the standardisation of the streptococcal vaccine by counting methods seems to me to be futile, for in a well-shaken vaccine some of the chains break up into diplo-, triplo-cocci, into chains of all kinds of length, and some cocci autolyse so that one is quite at sea to know what constitutes a single streptococcus. Wherefore in this case an opacity method is probably the more correct, but it may be questioned whether any known method of standardising streptococcal vaccines is satisfactory. The same applies to staphylococcal vaccines, but perhaps not quite so forcibly.

Too much importance should not be attached to *any* vaccine count, for no two patients have the same toleration and no two vaccines have the same toxicity. That fine adjustment which makes for success in vaccine therapy is born of long experience and is a comparatively rare quality, but I am equally sure that some practitioners have an uncanny flair both for choosing the right case for vaccine therapy and for giving the optimum dosage. It will also be noted that for curative specific therapy stock vaccines are of very limited value, since in a mixed vaccine the correct dose of the requisite organism is masked by dilution with other unnecessary organisms, and their inelastic composition is rarely likely to be compatible with any given case.

We owe a great debt to Major Brown for his work in correlating weight and opacity standards.

I am, Sir, yours faithfully,
A. GEOFFREY SHERA, M.D. Cantab.
Welbeck-street, W., Nov. 1st, 1925.

Obituary.

GEORGE HAYNES FOSBROKE, M.R.C.S. ENG., D.P.H.

THE death is announced of Dr. G. H. Fosbroke, medical officer of health for Worcestershire, at Bidford-on-Avon, Warwickshire, after nearly a year's illness.

George Fosbroke was born in 1850 at Bidford-on-Avon, where his family have been known for more than 500 years. He was educated at St. Michael's College, Tenbury, and Swansea Grammar School, and entered Westminster Hospital in 1867. Having become an L.S.A. in 1871 he acted as assistant surgeon to the National Society during the Franco-Prussian War, and for his services was given the war medal by the French Government. He took his M.R.C.S. diploma in 1872, and for two years occupied the posts of resident obstetric physician and resident house physician at Westminster Hospital. In 1873 he returned to his own county as whole-time medical officer of health to the Stratford-on-Avon Combination of Sanitary Authorities, which included Poor-law unions in Worcestershire, and thus became one of a very small number of whole-time officers for groups of sanitary districts. In 1875 he sat for the first examination at Cambridge for the Diploma in Public Health, and in 1881 became President of the Birmingham and Midland Association of Medical Officers of Health. The Worcestershire County Council was one of the first to appoint a county medical officer of health; the decision to do so was not reached without considerable opposition, and meetings of protest were held in a great number of places in the county. The county council was fortunate enough to appoint Dr. Fosbroke as county medical officer in 1890 and with his assistance became one of the most progressive authorities in promoting public health measures. Dr. Fosbroke acted as adviser to the Gloucestershire County Council from 1900–02, and was the representative of the Local Government Board on the London Sanitary Inspectors' Examination Board, and examiner for the Royal Sanitary Institute. In 1902 he was largely instrumental in founding the Knightwick Sanatorium for tuberculosis which, starting with 16 beds, became in 1915 the King Edward VII. County Memorial with 86 beds. Though not a profuse writer, he contributed several articles to professional journals, and his routine reports to the county council contained matter of more than ephemeral interest.

Dr. Fosbroke's quiet and unassuming manner of overcoming difficulties and prejudices bore fruit in much valuable work for his county. His friendly relations with his colleagues in general practice in days when friction was common was shown by his election as president of the Worcestershire and Herefordshire branch of the B.M.A. in 1894. As a man few were more welcome in any sphere of life. He was a keen sportsman, and until prevented by an accident was well known to followers of three Midland packs of foxhounds as a hard rider. In 1887 he married Miss Mary Thorpe Lane, of Dorsington Manor, Gloucestershire, but he has left no children.

NINA HENRIETTA BEATH, M.B., Ch.B. Edin.

The death of Miss Nina Beath in London on Oct. 27th follows rapidly on her return from her work for the Presbyterian Church of England at the Women's Hospital, Swatow, China. She had been unwell for some months, but only gave up her arduous duties at the hospital at the beginning of June and reached London on Oct. 3rd. The daughter of the late Lieut.-Colonel John Henry Beath, C.B., R.A.M.C., she was born at Stirling in 1872, and after taking her degrees at Edinburgh in 1902 she went out to Swatow two years later. Her death deprives the English Presbyterian Missions in China of their leading woman member. In addition to her hospital duties she trained many Chinese students of medicine, employing for the purpose their own language, of which she was a master. She was also as active as her medical duties would allow her to be in the evangelistic work of the missions, and often preached to large gatherings of women and children.

Medical News.

UNIVERSITY OF LONDON: *University College Hospital.*—Four lectures on the History of Medicine, illustrated by lantern slides, will be delivered at University College Hospital Medical School by Dr. Charles Singer on Thursdays at 4.15 P.M., from Nov. 12th to Dec. 3rd. The subjects will be the History of Influenza, Diphtheria, Enteric Fever, and Small-pox, and the lectures will be open to all medical students of the University of London.

ROYAL COLLEGE OF PHYSICIANS OF LONDON.—An ordinary quarterly Comitia of the College was held on Oct. 29th, the President, Sir Humphry Rolleston, occupying the chair. The following candidates having passed the necessary examinations were admitted as Members of the College:—

Drs. William F. Addey, Harold G. Anderson, Tridib Nath Bandgopadhyay, Ambuj Nath Bose, Reginald T. Brain, Oscar Brenner, Frederick J. H. Campbell, Weldon D. Champneys, Samuel H. Cookson, Gerard J. Crawford, Thomas H. Crozier, Cyril L. Elgood, Rowland B. Fawkes, Louis Forman, William I. Gerrard, Paul C. Gibson, Francis H. K. Green, Geoffrey Hadfield, Frederick W. Hamilton, Richard A. Hickling, Ronald E. Lane, Edward B. Marsh, James Maxwell, Alan A. Moncrieff, Benjamin B. Morgan, Milroy A. Paul, Wilfred P. H. Sheldon, John F. Smith, Norman W. Snell, Frederick H. W. Tozer, Francis C. O. Valentine, Richard H. Wade, George F. Walker, and Adam White.

Licences to practise physic were granted to 211 candidates (including 36 women) who had passed the necessary examinations. The following are the names and medical schools of the successful candidates:—

A. R. Adderley, St. Thomas's; R. D. Aiyar, Madras and London; V. M. Albuquerque, King's Coll.; C. R. Alderson, Univ. Coll.; R. B. Alston and R. C. Amies, St. Thomas's; Leah Appell, Charing Cross; H. K. Ashworth, Manchester; A. A. Atkins, London; D. G. Balakirsky, Liege and Middlesex; C. V. N. Baldry, Sydney and St. George's; W. A. Ball, King's Coll.; K. Bandaly, Univ. Coll.; J. V. Bannehr, St. Bart.'s; T. F. Barlow, London; J. M. Bassett, Edinburgh; J. R. Beal, Manchester; A. D. Belilios, St. Thomas's; H. S. Bell, Liverpool; W. T. E. Blackmore, Cardiff and London; Kathleen Blake, King's Coll.; V. H. Brink, Oxford and London; J. M. Brodrick, Liverpool; G. P. Brooks and W. Buckley, London; Margaret A. L. Buckner, Univ. Coll.; Olive K. Burnett, Royal Free; Isabella M. G. Butler, Univ. Coll.; J. P. Carpenter, Birmingham; Fanny L. Cattle, Univ. Coll.; R. T. Chadwick, Cambridge and St. Bart.'s; W. S. Chapman, Univ. Coll.; Dorothy A. Chown, Royal Free and St. Mary's; L. M. Clark and C. D. Cogswell, King's Coll.; R. Collins, Leeds; A. N. Coomarasamy, Madras and London; P. F. S. Court, Guy's; Anne A. Craig, Royal Free; P. E. J. Cutting, St. Bart.'s; A. J. Daly, London; A. C. Dalzell, King's Coll.; S. W. Davies, Cardiff; G. Dietrich, St. Bart.'s; J. Dockray, Cambridge and St. Bart.'s; W. H. Dowell, Guy's; Muriel E. Drew, Bristol; J. J. F. Dunn, Calcutta and St. Mary's; Dorothy Durance, Royal Free; J. Y. Eccles, St. Thomas's; N. L. Edwards, Manchester; A. Elliott, Guy's; Norah A. M. Empson, King's Coll.; Brenda H. English, Royal Free; I. A. Evans, Cardiff and Manchester; O. F. Farndon and R. R. Fells, St. Bart.'s; S. J. Firth, Manchester; P. H. Flockton, St. Bart.'s; A. C. Gairdner, Oxford and London; S. E. Gawthrop, Cambridge and Durham; H. Geary, Manchester and Guy's; J. F. E. Gillam, St. Thomas's; B. M. C. Gilsenan, St. Bart.'s; G. N. Golden, London; J. G. Goodman, Guy's; M. Gottfried, St. Mary's; E. P. Gough, Cambridge and St. Bart.'s; Phyllis M. Grainger, Birmingham; H. W. Greenwood, Middlesex; Margaret H. Greg, Royal Free and Manchester; G. J. Gregerson, Adelaide and London; J. C. P. Grey, Cambridge and St. Thomas's; H. R. Griffin, Middlesex; Sarah P. M. Griffiths, Cardiff and Westminster; T. A. Griffiths, Liverpool; W. S. Grove, Cambridge and Guy's; L. J. Haydon, Cambridge and St. George's; A. B. Hewlett, King's Coll.; J. D. Hindley-Smith, Cambridge and St. George's; J. C. Hogg, Cambridge and St. Bart.'s; D. P. Holmes, Westminster; L. Holmes, St. Bart.'s.; T. K. Homer and J. P. Huins, Birmingham; Ruth T. Hurnard Royal Free; D. S. Jackson, Madras and St. Mary's; I. A. Jackson, Cambridge and Guy's; Isabel E. S. James, King's Coll; R. Jones, Cardiff and Charing Cross; Adele A. Kahan, Charing Cross; M. E. Lampard, Cambridge and King's Coll.; I. Landon, St. Bart.'s; D. M. Lang, Guy's; C. G. Le Couilliard, Middlesex; A. H. Levers, Cardiff and Westminster; H. M. Levy, Middlesex; S. Levy-Simpson, Cambridge and London; R. Lewthwaite, Middlesex; D. W. E. Lloyd, Guy's; Mary C. Luff and Joan L. Lush, Univ. Coll.; J. D. S. McGeoch, Birmingham; B. W. S. Mackenzie, Cambridge and Univ. Coll.; W. K. McKinstry, Cambridge and St. Bart.'s; S. B. Malik, Punjab and Charing Cross; Margaret C. Malone, King's Coll.; C. Marian, Univ. Coll.; R. Marnham, Cambridge and St. George's; R. G. Mathews, Oxford and Univ. Coll.; R. C. May, Guy's; K. V. Mead, St. Thomas's; J. A. A. Mekelburg, Cape and Guy's; Clara Mendelssohn, Westminster; R. D. Milford, Cambridge and St. George's; Mary A. Monro, Royal Free; D. G. Morgan, Cardiff; Gertrude M. E. Morgan, Cambridge and St. Mary's; W. S. Morgan, Cardiff and St. Bart.'s; G. C. Morris, St. Mary's; Una F. M. Morton, Univ. Coll.; W. Murphy, Leeds; R. G. Nethery and F. M. Newnham, Guy's; H. A. Nicholls, St. Bart.'s; G. A. H. Norman, Westminster; D. W. C. Northfield, Guy's; H. E. Nourse, Cambridge and Middlesex; Eileen A. Nugent, Royal Free; T. C. Oakley, Birmingham; M. Odess, St. Mary's; D. Oliver, St. George's; C. J. S. O'Malley, St. Thomas's; A. Orliansky, Geneva and Middlesex; Sharada G. Pandit, Bombay; C. F. Parry, Cardiff and Guy's; F. B. Parsons, Cambridge and St. Bart.'s; G. Paterson, St. Thomas's; H. L. Peake, Guy's; L. V. Pearson, Cambridge and St. Bart.'s; B. Perchman, Charing Cross; J. D. L. Perera, Ceylon and London; D. Plum, St. Thomas's; C. G. E. Plumstead, Cambridge and St. Georges; F. H. Pratt, Guy's; J. D. Procter, Cambridge and Univ. Coll.; W. E. H. Quennell, St. Bart.'s; R. L. Quilliam, King's Coll.; R. J. Rankin, Cardiff and St. Bart.'s; J. D. Rear, Guy's; L. D. Richards, Charing Cross; K. E. R. Robertson, Calcutta and St. Mary's; P. H. Rossier, Lausanne and Zurich; C. J. Rozario, Calcutta and St. Thomas's; E. J. Rubra, Westminster; N. .L Russell, St. George's; I. J. Sachs, Middlesex; K. G. Salmon, Cambridge and St. Bart.'s; J. N. Sankey, Birmingham; Ethel M. Sargant, Cambridge and St. Mary's; A. G. Schroeder, Adelaide and London; C. R. Selous Jones, Cambridge and St. Thomas's; E. M. Shackel, Cambridge and St. Thomas's; J. W. Shackle, Cambridge and Guy's; Sara C. A. Sharpe, Royal Free and St. Mary's; J. Silverstone, Westminster; T. St.J. H. Silvester, Guy's; H. Simmonds, St. Bart.'s; G. Simon, Cambridge and St. Bart.'s; E. M. Smith, Univ. Coll.; K. S. Smith, Middlesex; R. E. Smith and E. Sorabjee, Guy's; J. Spencer, St. Bart.'s; A. L. Stephen and I. H. K. Stevens, Univ. Coll.; Gertrude H. C. Stinson, Royal Free; Mary Stirk, Manchester, R. G. Strouts, London; B. R. Sworn and C. C. Taffs, St. Thomas's; G. K. Taylor, Cambridge and St. George's; S. P. Taylor, Bristol; Elizabeth L. Taylor-Jones, Royal Free; G. A. J. Teasdale, Middlesex; E. J. S. Topham, Cambridge and St. Bart.'s; Mary C. Tugman, St. Mary's; A. B. W. Van Zyl, Amsterdam and Middlesex; W. A. Vickers, Liverpool; D. Vidofski, London; J. Viljoen, Cape and Manchester; R. J. Vince, Cambridge and London; D. C. Virmani, Lahore and Charing Cross; I. N. Vitenson, London; Florence M. Wallen, Cardiff; W. F. Waudby-Smith, St. Bart.'s; J. K. G. Way, Guy's; R. Wear, Durham; Elizabeth M. Weideman, St. Mary's; P. Weiner, King's Coll.; A. S. Wesson, Univ. Coll.; Joyce E. M. White, Royal Free and London; J. D. V. Wijeyaratne, Ceylon and King's Coll.; D. P. Williams, Middlesex and Cardiff; T. I. Williams, Guy's; H. L. Wilson, St. Bart.'s; H. F. Wilson, London; F. G. Winterton, Cambridge and St. Bart.'s; J. T. Woodhead, Cambridge and St. George's; A. T. Worthington, Cambridge and St. Bart.'s; and E. W. C. Woutersz, Calcutta and St. Mary's.

Dr. J. A. Nixon, of Bristol, was elected an Examiner in Medicine, to serve until July, 1927, in the place of Dr. J. W. Russell, of Birmingham, deceased.—A report was received from the President of the College who had attended the International Prison Congress as delegate.—The alterations in the by-laws relating to the examinations for the Membership were read a second time and passed. These include a provision designed to meet the case of medical men who have been engaged in special branches of practice lying outside the direct course of clinical medicine. Those over 30 will now be permitted to submit work they have published in any branch of medical science or in general literature, and if the Censors' Board decide that it is of sufficient merit they may excuse the candidate part or the whole of the examination. Another concession permits a referred candidate, in the absence of any special prohibition by the Censors' Board, to submit himself for re-examination without waiting for the expiration of six months, as has hitherto been the case. [A reference to these changes appears in our editorial columns.]—A letter from Dr. Daniel O'Connell Finigan asking that the Membership which he resigned in 1912 may be restored to him, was read a second time. The application was granted.—A report was received from the Committee of Management.—Dr. R. A. Young was re-elected a member of the Committee of Management.—The President announced the award of the Streatfeild Scholarship to Norman Leslie Capener, F.R.C.S., whose subject of research was "The Comparative Anatomy and Function of the Prostate Gland," and the award of the Jenks Scholarship for 1925 to Oliver Ive, of Guy's Hospital Medical School and formerly of Epsom College.—The award, by the University of Edinburgh, of the Murchison Scholarship for 1925 to Miss Sidney Elizabeth Croskery was also announced.

SOCIETY OF APOTHECARIES OF LONDON.—At examinations held during last month the following candidates passed in the subjects indicated:—

Surgery.—R. F. Ashkenny, London Hosp.; A. O. Dreosti, St. George's Hosp.; C. L. Froehlich, Guy's Hosp.; E. J. Newman, London Hosp.; M. Pettigrew, Sheffield; M. V. Roberts, London Hosp.; G. E. Rowan, St. Thomas's Hosp.; P. B. Skeels, Guy's Hosp.; J. Tarshish, Liverpool; M. E. G. Wilkinson, Bristol; and H. J. F. Wood, Guy's Hosp.

Medicine.—M. Bannounah, Guy's Hosp.; A. O. Dreosti, St. George's Hosp.; A. M. El Mishad, Guy's Hosp.; A. L. Evans, Cambridge and London Hosp; C. L. Froehlich, Guy's Hosp.; T. H. Harrison, Sheffield; M. Hook, Boston, U.S.A.; N. H. Ibrahim, Durham; F. G. Martin, Charing Cross Hosp.; P. B. P. Mellows, St. Bart.'s Hosp.; E. J. Newman, London Hosp.; E. H. Rampling, St. Thomas's Hosp.; F. Reynolds, Manchester; L. A. Rostant, St. Thomas's Hosp.; G. H. Shanley, Durham; and J. Tarshish, Liverpool.

Forensic Medicine.—A. F. Brighmen, Edinburgh; V. G. Crowley, Sydney and St. George's Hosp.; A. O. Dreosti, St. George's Hosp.; A. L. Evans, Cambridge and London Hosp.; W. O. H. Evans, Bristol; N. H. Ibrahim, Durham; F. G. Martin and K. G. B. McMahon, Charing Cross Hosp.; F. Reynolds, Manchester; G. H. Shanley, Durham; M. E. G. Wilkinson, Bristol; F. Winelake, Bern; and H. J. F. Wood, Guy's Hosp.

Midwifery.—J. H. Clapp, London Hosp.; T. K. Clifford, Manchester; S. W. Cuff, St. Bart.'s Hosp.; A. O. Dreosti, St. George's Hosp.; M. Hook, Boston, U.S.A.; E. P. Hyde, Manchester; E. J. Jones, Middlesex Hosp.; P. H. L. Moore, Sydney and St. George's Hosp.; T. C. Pain, Guy's Hosp.; F. Reynolds and J. B. Scarr, Manchester; and H. J. F. Wood, Guy's Hosp.

The Diploma of the Society was granted to the following candidates entitling them to practise medicine, surgery, and midwifery: J. H. Clapp, S. W. Cuff, A. O. Dreosti, A. L. Evans, T. H. Harrison, E. P. Hyde, N. H. Ibrahim, E. J. Newman, F. Reynolds, M. V. Roberts, G. H. Shanley, P. B. Skeels, M. E. G. Wilkinson, F. Winelake, and H. J. F. Wood.

HUNTERIAN SOCIETY.—A meeting will be held at the Cutlers' Hall, Warwick-lane, London, E.C., on Nov. 9th, at 8.45 P.M., at which there will be a discussion on the Relation of Spiritual Healing to Modern Medicine. Amongst those who have promised to take part are the Bishop of Kensington, Rev. Canon Douglas, Rev. Mr. Anson, Dr. F. G. Crookshank, Dr. Edwin Ash, and Dr. M. P. Leahy. Fellows are reminded that they may bring non-medical guests to this meeting.

ROYAL COMMISSION ON NATIONAL HEALTH INSURANCE.—The forty-third meeting of the Commission was held at the Home Office, Whitehall, on Oct. 29th, Sir Arthur Worley, and later Lord Lawrence of Kingsgate in the chair. Evidence was given by Mr. A. B. Maclachlan and Mr. H. W. S. Francis, assistant secretaries, Ministry of Health, as to the public provision of health services outside the insurance scheme and the relations of these to the medical benefit arrangements. Thereafter further evidence on the general provisions of the insurance scheme was given by Sir Walter Kinnear, Mr. L. G. Brock, Dr. Smith Whitaker, of the Ministry of Health, and by Sir James Leishman and Mr. G. Wight, of the Scottish Board of Health. The Commission announce that Volume III. of the Minutes of Evidence (twenty-fourth to thirty-fourth days) and Part III. of the Statements of Evidence (Appendices XL. to LXXVI.) are now on sale in final form at H.M. Stationery Office, price 10*s.* and 10*s.* 6*d.* respectively, postage extra.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION.—Dr. F. J. Poynton will lecture on Monday, Nov. 9th, at 5.30 P.M., in the Lecture Hall of the Medical Society of London, 11, Chandos-street, W. His subject will be Some Points in the Diagnosis of Tuberculosis in the Child, and all members of the medical profession will be welcome.—There is now in progress a course on Gynæcology at the Chelsea Hospital for Women, and on Venereal Diseases at the London Lock Hospital. The former will continue until Nov. 20th and the latter until the end of the month.—Dr. Porter Phillips and Dr. Thomas Beaton began a series of eight lecture-demonstrations on Psychological Medicine at the Bethlem Royal Hospital on Nov. 3rd, for which the fee is £1 1*s.*—At the Victoria Park Hospital a two weeks' course has been arranged from Nov. 9th to the 21st. Clinical instruction and lecture-demonstrations on the Various Diseases of the Chest will be given.—From Nov. 23rd to Dec. 12th the Royal Waterloo Hospital will hold a course in Medicine, Surgery, and Gynæcology.—For the convenience of the general practitioner, the London Temperance Hospital will give a late afternoon course (4.30 to 6 o'clock) in General Subjects from Nov. 23rd to Dec. 4th.—A course dealing with the Diagnosis and Treatment of Nervous Diseases will take place at the West End Hospital (73, Welbeck-street) from Nov. 23rd to Dec. 12th.—Copies of each syllabus, and also the general course programme, may be obtained from the Secretary to the Fellowship at 1, Wimpole-street, London, W. 1.

PHARMACEUTICAL SOCIETY.—A meeting will be held in the lecture theatre of the society's house on Tuesday, Nov. 10th, at 8 P.M., at which Lieut.-Colonel Sir David Prain, formerly director of Royal Botanic Gardens, Kew, will lecture on Some Useful Plants of India. Medical friends of members and student-associates will be cordially welcomed.

ST. THOMAS'S HOSPITAL MASSAGE DEPARTMENT.—A series of lecture-demonstrations are being given in this department on Tuesday afternoons at 4.30 P.M. by Dr. James Mennell. On Nov. 10th and 17th the subjects will be: Forced Movement—"Bone-setting" Manipulations—"Osteopathic" Manipulation.

WEST KENT MEDICO-CHIRURGICAL SOCIETY.—A meeting will be held at the Miller General Hospital, Greenwich, London, S.E., on Friday, Nov. 13th, at 8.45 P.M. The President, Dr. Arthur Davies, will occupy the chair, and a lecture will be given by Dr. W. Gilliatt on Eclampsia.

ABERDEEN UNIVERSITY CLUB, LONDON.—The bi-annual dinner is to be held at the Criterion Restaurant, Piccadilly, on Thursday, Nov. 19th, at 7.30 P.M., when Prof. H. M. Macdonald will take the chair. The guest of the evening will be Sir Humphry Rolleston, and Dr. W. A. Milligan, 11, Upper Brook-street, W. 1, will be glad to hear from any graduates (past or present) wishing to attend the dinner or join the club.

ROYAL DENTAL HOSPITAL OF LONDON, SCHOOL OF DENTAL SURGERY.—The annual dinner of the staff and past and present students of the hospital will be held at 6.30 for 7 P.M. on Saturday, Nov. 21st, at the Trocadero Restaurant, Piccadilly, London, Mr. W. H. Dolamore in the chair. On the afternoon of the same day the medical committee will be "At Home" from 2 to 5 o'clock to all past and present students of the hospital, when the various departments of the hospital and school will be open, and specimens and cases of interest shown by the members of the staff and lecturers. Medical practitioners are invited to be present.

ST. THOMAS'S HOSPITAL DINNER.—About 190 old students of St. Thomas's Hospital attended the annual dinner held at the Hotel Victoria on Oct. 30th. Mr. Samuel Osborn was chairman, and amongst those present were Sir Arthur Stanley (treasurer), Sir Cuthbert Wallace (Dean of the medical school and senior surgeon), Dr. C. R. Box, Lord Riddell, Lieut.-General Sir William Leishman, Air Vice-Marshal D. Munro, Sir George Makins, Sir Richard Havelock Charles, Sir Hector Mackenzie, and Sir Harold Downer. After dinner the Chairman proposed the health of the "Hospital and Medical School" in a speech full of interesting reminiscence. It was 57 years, he said, since he joined the hospital, and he believed that with the exception of General W. B. Slaughter he was the oldest old student that remained; he was certainly the first house physician in the new buildings and the last accoucheur at Surrey Gardens. Sir Arthur Stanley said that it was the duty of those who, like Mr. Osborn, had a store of information about the past to put it on record for the future. Small facts, like small articles of furniture, were only too easily lost. The life of hospital treasurers, he said, was increasingly difficult. In the old days a man coming into hospital with a bad foot was treated for a bad foot; but now he had his stomach X rayed and probably his teeth were removed. All this made for expense. Sir Arthur Stanley ended by referring to the new club and hostel which are being put up as a war memorial. Sir Cuthbert Wallace stated that there were 454 students at the school and hospital during the year; to provide for the education of these cost £30,000 a year, and but for the Government's grant of over £10,000 there would be a heavy deficit, no matter what economy was used. After speaking of those old students who had died during the year, Sir Cuthbert Wallace mentioned the distinctions that had been gained and athletic successes. The O.T.C. had won the cup given for the most efficient medical unit. Sir George Makins, speaking of the war memorial, thought it was very appropriate, and paid a tribute to the treasurer, the governors, and staff for the work which had made the memorial possible. In proposing the health of the Chairman, Sir George Makins said that Mr. Osborn had been one of the first anæsthetists to the hospital. In those days it was a much more serious thing to be an anæsthetist and the anxiety involved was enormously increased by the anxiety of the surgeon. Mr. Osborn had educated the British public up to knowing a certain amount of first-aid and to being able to help themselves, and not the British public only, since it was doubtful if any book except the Bible had been translated into as many languages as Mr. Osborn's. He had also won distinction as a medical practitioner in several wars and was a great traveller. After the Chairman had suitably replied there was an opportunity for informal conversation.

British Serbian Units Branch of the British Legion.—This branch is holding its annual dinner at Anderton's Hotel, Fleet-street, on Thursday, Dec. 10th, and all who worked for the Serbians, and their friends, are invited. The chairman will be Sir James Purves-Stewart, and tickets, price 7*s.* 6*d.* each, may be obtained from the hon. secretary, Oxford House, Junction-road, London, N. 19.

International Society of Medical Hydrology. A special meeting of this society to discuss the treatment of rheumatism in industry is to be held—jointly with the Section of Balneology and Climatology of the Royal Society of Medicine—on Friday, Nov. 27th, at 10 A.M., in the Barnes Hall, Royal Society of Medicine, 1, Wimpole-street, London, W. The President, Dr. Gustave Monod (France), will occupy the chair, and the following are expected to take part in the discussion: Sir George Newman, Dr. Van Breemen (Director of the Institute for Physical Treatment, Amsterdam), Dr. Frank Kornmann (Switzerland), Dr. Kahlmeter (consultant to the Direction des Pensions de Retraite, Stockholm), Dr. Louis Blanc (France), Dr. Schmidt (Czecho-Slovakia), Dr. R. G. Llewellyn, Dr. Otto May, Dr. Matthew Ray, Dr. Kerr Pringle, Dr. C. W. Buckley, and Dr. Fortescue Fox. Members proposing to attend are asked to reply as soon as possible to Dr. E. P. Poulton, 36, Devonshire-place, London, W. 1.

National Council for Mental Hygiene.—A meeting of the Council was held on Nov. 2nd at the House of the Royal Society of Medicine at which Sir Courtauld Thomson took the chair. Lord Birkenhead said that the object of the Council was to educate public opinion so that it should get away from the idea of incarceration and should regard institutions for mental diseases as hospitals. Sir Maurice Craig spoke of the difficulty of inducing the public to subscribe funds for the prevention of disease. "The British public," he said, "will do anything to try to cure disease, but will do nothing to prevent it." In dealing with insanity large sums were spent in housing patients who would never have got into their sad condition if early treatment had been available. A more enlightened attitude towards mental disorder was essential and the Council was trying to collect and disseminate evidence. Dr. W. A. Potts said that magistrates seemed to imagine that they could diagnose mental defect, though they would never borrow a stethoscope to try to diagnose heart trouble. He pleaded for fuller education of the medical profession on mental disease. Lord Southborough said that there were practically no facilities for early treatment so far as the vast majority of the population was concerned.

Liverpool Medical Institution.—At a meeting held on Oct. 29th, Mr. R. Craig Dun, the President, being in the chair, Mr. John T. Morrison read a short paper on the Surgery of the Lung. He outlined the difficulties met with in experimental work and the controversy between Graham and Duval as to the physics of the chest with a wide open pneumothorax. He then described his own experiences in performing partial and complete pneumectomies in rabbits, using ordinary open ether anæsthesia. When the whole lung was removed the animals always died, apparently as the result of the trauma to the pulmonary root, since death could always be prevented by section or blockage of the vagus in the neck. No case of sepsis had occurred although the lung pedicle was merely crushed and tied with 10-day catgut. The difference between the sterile bronchi in rabbits and the infected bronchi in man in disease was pointed out and some of the methods referred to by which the risk of sepsis from this source could be minimised. Mr. Morrison then described the gross and histological changes that occurred after total pneumectomy, alluding to the altered contour of the chest, the hypertrophy of the heart, and the twofold changes in the lung; in some emphysema, in others mainly an intense congestion. After a review of the outstanding achievements in pulmonary surgery Mr. Morrison appealed for more frequent recourse to exploratory thoracotomy, a simple and more effective operation than exploratory laparotomy. Such exploration would disclose cases amenable to surgical treatment and, more important still, lead to a knowledge of the pathology of the living chest, analogous to that which had revolutionised the treatment of alimentary diseases.

Sir William Collins has been appointed Vice-Lieutenant of the County of London.

The meetings of the Royal Commission on Lunacy and Mental Disorder are to be resumed on Nov. 10th, at 10.30 A.M., at 1, Whitehall-gardens, S.W.

Mr. W. H. Cruickshank has been appointed Professor of Physiology in the Prince of Wales Medical College, Patna, India.

Councillor Dr. W. James Susman has been elected as Mayor for the borough of Henley-on-Thames for the ensuing year.

Pioneers in Tropical Medicine.—Dr. Andrew Balfour's presidential address to the Royal Society of Tropical Medicine and Hygiene will appear, fully illustrated, in the next issue of the Transactions of the society.

Sheffield Medical Dinner.—The annual dinner will be held in the Royal Victoria Hotel at 7.30 P.M. on Thursday, Nov. 12th. Applications for tickets (12*s.* 6*d.*) should be made to the hon. secretary, Dr. J. Eric Stacey, 2, Durham-road, Sheffield.

Child-Study Society.—A lecture on the Development of Speech in the Normal Child will be delivered on Nov. 12th, at 6 P.M., by Mr. Macleod Yearsley, at 90, Buckingham Palace-road, London, S.W., Dr. James Kerr presiding.

The Minister of Health at Halifax.—Mr. Neville Chamberlain visited Halifax on Oct. 26th, and after inspecting several institutions devoted to women's welfare, opened a workshop for the blind at the Hostel of the Halifax Society for the Blind. The workshop, like the hostel, has been built under a £10,000 legacy from the late Mr. J. W. Horsfall. Mr. Chamberlain said that blindness was mostly due not to accident, but to causes which in a perfect state of society should not occur. Referring to smoke in Halifax, he said that he hoped to introduce a new Smoke Abatement Bill in Parliament in the coming year. It did not do to rely exclusively on the central authority for the control of smoke, and his object was to promote partnership between local and central authorities for this matter.

Medical Diary.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

Monday, Nov. 9th.

WAR: at 5 P.M.
Paper:
Wing-Commander E. C. Clements, R.A.F.: Visual Problems and their Relation to Flying and Industrial Fatigue from the Service Standpoint.

Tuesday, Nov. 10th.

THERAPEUTICS AND PHARMACOLOGY: at 5 P.M.
Discussion on
The Influence of the Ovary on Parturition.
Other Speakers:
Mr. F. M. A. Marshall, Dr. Langdon Brown, Dr. Wilfred Shaw.
OBSTETRICS AND GYNÆCOLOGY:
Members of this Section are particularly invited to attend above Meeting.
PSYCHIATRY: at 8.30 P.M.
Presidential Address:
Dr. R. H. Cole: The Progress of Psychiatry.

Wednesday, Nov. 11th.

SURGERY: SUBSECTION OF PROCTOLOGY: at 5.30 P.M.
Presidential Address:
Mr. G. Grey Turner: The Relationship of Proctology to Greater Medicine.
A discussion will follow.
There will be a demonstration of pathological specimens.

Thursday, Nov. 12th.

TROPICAL DISEASES AND PARASITOLOGY: at 5.30 P.M.
Presidential Address:
Sir William T. Prout: Medical Conditions in Tropical Countries.
Paper:
Dr. Aldo Castellani: Typhoid and Paratyphoid-like Fevers caused by Organisms which Differ from *B. typhosus* and *B. paratyphosus* A, B, C.
Specimens:
Dr. Arthur Powell: Specimen of the Spirochæte of Rat-bite Fever from Bombay (*Treponema morsus muris*).
Dr. S. Roodhouse Gloyne: Specimen of *Tænia cœnurus serialis.*
MEDICINE:
Members of this Section are cordially invited.
NEUROLOGY: at 8.30 P.M.
Joint Paper:
Dr. Wilfred Harris and Dr. W. D. Newcomb: On a Case of Glioma of the Pons, with Special Reference to its Bearings on the Physiology of the Fifth Cranial Nerve.

Friday, Nov. 13th.

CLINICAL: at 5.30 P.M. (Cases at 5 P.M.)

Cases and Specimens:

Dr. J. H. Sheldon: Multiple Myelomatosis.

Dr. Bernard Myers: Amyotonia Congenita.

Dr. B. T. Parsons-Smith: Intrapericardial Aneurysm of Aorta.

Mr. J. D. Driberg: (1) Axillary Tumour; (2) Case for Diagnosis.

Dr. J. F. Halls Dally: Hyperpiesia and Demonstration of a New Mercurial Blood Pressure Instrument.

Dr. L. S. T. Burrell: Bronchiectasis and Cerebellar Abscess.

Dr. F. E. Saxby Willis: Specimen showing Primary Carcinoma of Left Bronchus.

Dr. E. Stolkind: (1) Case of Hypopituitarism. (2) Case of Polycythæmia Vera treated by X rays. (3) Description of Case of Fatal Medinal Poisoning.

OPHTHALMOLOGY }
SURGERY } at 8.30 P.M. (Cases at 8 P.M.)

Joint Discussion on

Plastic Operations on the Face in the Region of the Eye.

The following have promised to take part:—

Mr. H. S. Souttar, Mr. G. H. Pooley, Mr. Kilner, Mr. Percival Cole, Mr. Ormond, Mr. Shaw, Mr. Edmunds, Mr. M. W. B. Oliver.

MEDICAL SOCIETY OF LONDON, 11, Chandos-street, Cavendish-square, W.

Monday, Nov. 9th.—8.30 P.M., Discussion on Obscure Pyrexia in Childhood, to be introduced by Dr. Robert Hutchison, followed by Dr. Wilfred Pearson, Prof. F. S. Langmead, and others.

HARVEIAN SOCIETY OF LONDON.

Thursday, Nov. 12th.—8.30 P.M. (at the Paddington Town Hall, Paddington Green, W.), Dr. J. D. Rolleston: The Differential Diagnosis of Scarlet Fever and Diphtheria, and the Modern Methods of Treatment and Prophylaxis, followed by a discussion.

THE BIOCHEMICAL SOCIETY.

Monday, Nov. 9th.—5 P.M. (at King's College, W.C.). *Communications:* J. A. Hewitt and H. G. Reeves: Tautomerism of Glyceric Aldehyde; J. A. Hewitt and H. G. Reeves: Constitution of Glyceric Aldehyde: C. Lovatt Evans: Lactic Acid Formation in Plain Muscle; Elizabeth S. Semmens: The Hydrolysis of Starch in the Guard Cells of the Stomata of a Monocotyledon; J. Gordon, J. W. McLeod, and B. Wheatley: The Importance for the Bacteriologist of Differentiating between the Amino-Acids which Favour and those which Inhibit Bacterial Growth; J. R. Marrack and G. D. Thacker: The Influence of Ionic Strength on the Equilibrium of Calcium-ion in Bicarbonate Solutions.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

ROYAL COLLEGE OF PHYSICIANS, Pall Mall East, S.W.

Tuesday, Nov. 10th.—5 P.M., Dr. A. Shadwell: Medicine in Ancient Egypt, Assyria, and Palestine. (First FitzPatrick Lecture.)

Thursday.—5 P.M., Last FitzPatrick Lecture.

ROYAL COLLEGE OF SURGEONS OF ENGLAND, Lincoln's Inn-fields, W.C.

Wednesday, Nov. 11th.—5 P.M., Mr. James Sherren: Gastro-jejunostomy.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W.

Monday, Nov. 9th, to Saturday, Nov. 14th.—Fellowship of Medicine Lecture, Medical Society, 11, Chandos-street, W. Mon., 5.30 P.M., Dr. F. John Poynton: Some Points in the Diagnosis of Tuberculosis in the Child.—Bethlem Royal Hospital, Lambeth, S.E., Tues., 11 A.M., Dr. Porter Phillips: The Diagnosis and Symptomatology of Mental Diseases. Sat., 11 A.M., Dr. Thomas Beaton: Psycho-neuroses.—Chelsea Hospital for Women, Arthur-street, S.W. Post-graduate course in Gynæcology, lectures, and demonstrations daily. Pathology and operations.—London Lock Hospital, Dean-street. Comprehensive course. Instruction in the Out-patient Department and Lectures.—City of London Hospital for Diseases of the Heart and Lungs, Victoria Park, E. Post-graduate course in Diseases of the Heart and Lungs. Lectures, clinical demonstrations, and laboratory demonstrations.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N.

Thursday, Nov. 12th—3 P.M., Demonstration: Dr. J. Browning Alexander: Blood Pressure Investigations. 4.30 P.M., Lecture: Mr. J. Howell Evans: A Plea for Less Mutilating Operations in Carcinoma.

Daily: Clinics and Demonstrations in the Wards and various Out-patient Departments, Operations, &c.

UNIVERSITY COLLEGE, London.

Wednesday, Nov. 11th.—5.30 P.M., Prof. G. Elliot Smith and Dr. John Beattie: The Evolution of Man. (First of six Public Lectures.)

ST. JOHN'S HOSPITAL, 49, Leicester-square, W.C.

Tuesday, Nov. 10th.—5 P.M., Dr. H. MacCormac: Diseases due to Animal Parasites.

Thursday.—5 P.M., Dr. A. C. Roxburgh: Urticaria.

JAMES MACKENZIE INSTITUTE FOR CLINICAL RESEARCH, ST. ANDREWS.

Tuesday, Nov. 10th.—4 P.M., Dr. A. Hynd: The Estimation of Blood-Sugar.

QUEEN CHARLOTTE'S MATERNITY HOSPITAL, Marylebone-road, N.W.

Thursday, Nov. 12th.—5 P.M., Mr. T. Stevens: Meddlesome Midwifery.

NATIONAL HOSPITAL FOR THE PARALYSED AND EPILEPTIC, Queen-square, Bloomsbury, W.C. 1.

POST-GRADUATE COURSE: OCTOBER-NOVEMBER, 1925.

CLINICAL LECTURES AND DEMONSTRATIONS.

Monday, Nov. 9th.—2 P.M., Out-patient Clinic: Dr. Hinds Howell. 3.30 P.M., Tremor and Incoördination: Dr. Risien Russell.

Tuesday, Nov. 10th.—2 P.M., Out-patient Clinic: Dr. Walshe. 3.30 P.M., Peripheral Neuritis: Dr. Grainger Stewart.

Thursday, Nov. 12th.—2 P.M., Out-patient Clinic: Dr. Kinnier Wilson. 3.30 P.M., Hemiplegia: Dr. Walshe.

Friday, Nov. 13th.—2 P.M., Out-patient Clinic: Dr. Adie. 3.30 P.M., Electro-therapy in Lesions of Peripheral Nerves: Dr. Bailey.

The fee for the Course, including Pathology Lectures, is £5 5*s*. For those who hold Perpetual Tickets the fee is £3 3*s*.

COURSE OF LECTURES AND DEMONSTRATIONS ON THE PATHOLOGY OF THE NERVOUS SYSTEM.

Thursday, Nov. 12th.—12 noon, Subacute Inflammation: Dr. J. G. Greenfield.

COURSE OF LECTURES AND DEMONSTRATIONS ON THE ANATOMY AND PHYSIOLOGY OF THE NERVOUS SYSTEM.

Monday, Nov. 9th.—12 noon, Reflex Action as a Whole: Dr. J. L. Birley.

Dr. H. J. Macbride is giving a COURSE of EIGHT CLINICAL DEMONSTRATIONS, chiefly on METHODS OF EXAMINATION OF THE NERVOUS SYSTEM in the Wards at 10 A.M. on Tuesdays and Fridays. The fee for this Course is £2 2*s*.

Mr. Armour and Mr. Sargent operate at the Hospital on Tuesday and Friday mornings at 9 A.M., or at such other times as may be announced.

Any part of the Course may be taken separately. Special arrangements will be made for those unable to take the whole Course.

Fees should be paid to the Secretary of the Hospital at the Office on entering for the Course.

J. G. GREENFIELD, Dean of Medical School.

MANCHESTER ROYAL INFIRMARY POST-GRADUATE COURSE.

Tuesday, Nov. 10th.—4.15 P.M., Mr. J. Morley: Shoulder Tip Pain.

Friday.—4.15 P.M., Prof. J. S. B. Stopford: The Sympathetic Nervous System.

ANCOATS HOSPITAL POST-GRADUATE LECTURES.

Thursday, Nov. 12th.—4.15 P.M., Mr. H. Platt: The Treatment of Common Fractures, with Practical Demonstrations.

ROYAL INSTITUTE OF PUBLIC HEALTH, 37, Russell-square, W.C.

Wednesday, Nov. 11th.—4 P.M., Dr. Hastings Gilford: The Prevention of Cancer and Allied Neoplasias.

PEOPLE'S LEAGUE OF HEALTH, Fyvie Hall, Regent-street Polytechnic.

Friday, Nov. 13th.—6 P.M., Prof. Leonard Hill: Prevention of Tuberculosis.

Appointments.

POLLARD, J. M. W., M.D. Lond., has been appointed Senior Medical Officer, West African Medical Staff, Assistant Director of the Medical Service in Nigeria, in succession to Dr. B. Moiser, retired.

WALKER, E. W. AINLEY, M.D., B.Ch., D.Sc. Oxf., Lecturer in Pathology in the University of Oxford for a further period of five years.

WATT, ALEXANDER WILSON, M.B., Ch.B. Glasg., Junior Assistant Medical Officer at the Carlish Mental Hospital.

Certifying Surgeons under the Factory and Workshop Acts: MCCOULL, R., L.R.C.P., & S. Edin., L.R.F.P.S. Glasg. (Wylam District of the County of Northumberland); SYMONS, A. D., M.D., B.Ch. Bristol (Shrewsbury).

Vacancies.

For further information refer to the advertisement columns.

Bath, Royal Mineral Water Hospital.—Res. M.O. Aest rate of £130.

Belgrave Hospital for Children, Clapham-road, S.W.—Hon. Radiologist.

Birmingham City Hospitals for Infectious Diseases.—Sen. Asst. M.O. £400.

Brighton, Royal Alexandra Hospital for Sick Children.—H.S. £100.

Capetown, Somerset Hospital.—Res. Med. Supt. £800.

Cardiff, Welsh National School of Medicine.—Lecturer in Pathology and Bacteriology. £750.

Chesterfield and North Derbyshire Royal Hospital.—Res. Surg. O. £300. Fifth H.S. At rate of £100.

East Ham Education Committee County Borough.—Aural Surgeon. £3 3*s* per session.

Elizabeth Garrett Anderson Hospital, Euston-road.—H.P., Obstet. Asst., and Two H.S.'s. Each at rate of £50. Also Clin. Assts.

Glasgow, Lightburn Joint Hospital, Shettleston.—Res. Phys.-Supt. £350.
Lancaster, Borough of.—Asst. M.O.H. and Asst. Sch. M.O. £500.
Leamington Spa, Warneford General Hospital.—Res. H.P. At rate of £150.
Leyton Urban District Council.—Deputy M.O.H., &c. £600.
London Hospital, Mile End, E.—Asst. P. to Skin Dept. Also Hon. Dent. Surg.
London Lock Hospital, 91, Dean-street, W.—Clinical Assistantships.
Manchester, Barnes Convalescent Hospital, Cheadle.—Res. M.O. £250.
Norwich, City and County of.—M.O.H. £1100.
Oxford, Radcliffe Infirmary and County Hospital.—H.P., H.S., Cas. H.S. and Obstet. H.P. All at rate of £120.
Preston County Borough.—Asst. M.O. for Maternity and Child Welfare. £600.
Prince of Wales's General Hospital, Tottenham, N.—Hon. Anæsthetist.
Rhondda Urban District Council.—Asst. M.O. £600.
Royal College of Physicians, Pall Mall East.—Milroy Lecturer.
Royal Free Hospital, Gray's Inn-road, W.C.—Obstet. H.S., Gynæcological H.S. Also H.S.'s and Asst. Cas. O.
Royal Northern Hospital, Holloway, N.—H.S. At rate of £70. Case O.'s. At rate of £90.
Royal Waterloo Hospital for Children and Women, Waterloo-road, S.E.—Non. Res. Cas. O. £150. Also H.S. and H.P. Each at rate of £100.
St. Helen's County Borough.—Asst. M.O.H. £600.
Salford Education Committee.—Asst. Sch. M.O. £600.
Scottish Board of Health.—M.O. £500.
Staffordshire General Infirmary, Stafford.—H.P. At rate of £150.
Sudan Medical Service.—Three M.O.'s. £E720.

Births, Marriages, and Deaths.

BIRTHS.

Habgood.—On Oct. 24th, at Wolverton House, Old Wolverton, Bucks, the wife of Arthur Henry Habgood, D.S.O., M.B., of a daughter.

Parkinson.—On Oct. 30th, at 1, Devonshire-place, W., the wife of John Parkinson, M.D., of a daughter.

Pulvertaft.—On Oct. 25th, at "Cranleigh," Egham, the wife of R. J. V. Pulvertaft, M.B., of a daughter.

Spence.—On Oct. 23rd, the wife of Dr. D. Benham Spence, of Clarendon-road, Watford, of a son.

MARRIAGES.

Wells—Mason.—On Oct. 31st, at St. Mary's, Northleigh, Dr. Arthur Quinton Wells, to Rhona Margaret Alice, second daughter of James Francis Mason and Lady Evelyn Mason, Eynsham Hall.

DEATHS.

Beath.—On Oct. 27th, in St. Columba's Hospital, London, Nina Henrietta Beath, M.B., Ch.B. Edin., for 20 years missionary of the Presbyterian Church of England in Swatow, China.

Davidson.—On Oct. 28th, at Charmouth, Harold Davidson, M.R.C.S., L.R.C.P., of Teddington.

Fosbroke.—On Oct. 27th, at Bidford-on-Avon, Warwickshire, George Haynes Fosbroke, M.R.C.S. Eng., D.P.H. Camb., County Medical Officer for Worcestershire.

Pardington.—On Nov. 1st, at Tunbridge Wells, George Lucas Pardington, M.D., M.R.C.P. Lond., M.R.C.S. Eng.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

James Mackenzie Institute for Clinical Research, St. Andrews.—Sir Leslie Mackenzie on Oct. 27th read a paper on the Modern Outlook in Preventive Medicine. He said that the essential basis of all preventive medicine must be the work of the general practitioner, who comes in contact with the raw material. It was the ideal of the public services to give every assistance to the practitioner, and the only obstacle was the tendency of the official mind to be dehumanised and for the public services to become isolated instead of coöperative. Commenting on the remarkable expansion of the public preventive services in recent years, especially in the direction of supervision of expectant mothers and of child welfare treatment, he emphasised the part which must be played by the general practitioner in this development. Such institutions as the James Mackenzie Institute would be a liaison between the practitioner and the authorities. Practice under the Insurance Act was the principal field for this work, and the records obtained from the panel practitioners were very valuable. They were often crude or inaccurate, but taken in mass they gave a clear indication of the ailments responsible for loss of working time and therefore of the morbidity, as distinguished from the mortality, of the community.

Notes, Comments, and Abstracts.

CHILLED AND FROZEN MEAT.*

By W. J. Howarth, C.B.E., M.D., D.P.H.,

MEDICAL OFFICER OF HEALTH FOR THE CITY OF LONDON.

[Dr. Howarth began by paying a tribute to the efforts of the daily press to ensure the supply of pure food to people in all ranks of society. Multiple shops and restaurants with their central store and chemists and supervisors were able to ensure that the articles meet statutory requirements, and he claimed that they had diminished the sale of sophisticated foodstuffs. Going on to deal with the conditions under which food is imported, he mentioned the vast quantities of meat brought into the country in various forms. Safeguards had gradually been introduced to ensure the observance of certain essential requirements—namely: 1. That both home and imported products are in all respects sound and fit for human consumption. 2. That home products are prepared and manufactured in a satisfactory manner. 3. That products which at one time were considered satisfactory have not deteriorated and become unsound and unfit. 4. That the substitution of less desirable substances for those being purchased does not take place. 5. That the addition of objectionable material shall be prevented—e.g., preservatives. 6. That as far as may be possible products shall be composed of materials definitely stated. 7. That in those prepared foods in which certain unavoidable, but at the same time objectionable, contaminations may gain access in the course of manufacture, such contaminations shall be present in minimal and harmless amounts. Dr. Howarth then turned to the subject of refrigeration and substitution, and continued to the following effect:—]

Methods of Refrigeration.

Most of the imported meat arrives in the cold state. It is carried in chambers, the interior of which is chilled by cold, and this chilling may be produced in several ways. The most convenient method is that in which the cold-producing pipes are filled with brine and some portion of the pipes is submerged outside the room in a solution of cold brine. The brine enclosed in the pipes is chilled and made to circulate through the pipes, which are arranged in suitable ratios around the cold room. Goods deposited in cold store should be in a clean, satisfactory condition. Putrefaction is masked by freezing and only fresh material should be admitted, otherwise mustiness will result. Frozen goods which are removed from store for sale and thawed should not be readmitted. Definite responsibility should devolve upon someone to safeguard the public against stores being used to get rid of products which are in an unsatisfactory condition. A register should be kept of the products deposited. The chief requirements of the sanitary authority would be met by registration of stores, the compulsory keeping of a register of materials admitted and released, and free admission of the authority's officers to the different compartments and passages.

The chilling of meat does not retard objectionable changes sufficiently to ensure satisfactory carriage if the journey extends over a period longer than three or four weeks, and for this reason all Australian meat has to be frozen. Argentine meat is chilled, and as such meat on arrival has already almost reached the limits of exposure without deterioration it cannot be kept long after reaching this country; it has to be marketed, sold, and consigned reasonably quickly. To allow of chilled meat being conveyed over longer journeys several methods have been tried, but none of them can be considered to be of any help. Meat, being a putrescible material, may undergo change if there should be a serious breakdown in the refrigerating machinery, and since when it is frozen solid it cannot be examined satisfactorily for possible putrefactive changes, certain signs have to be looked for which indicate that the changes have occurred. Examination of the covers may be of some assistance. The white cloths in which the quarters are wrapped are put on when the carcasses are frozen hard and at that temperature they are dry. If a temperature below freezing-point is maintained during the voyage the cloths will remain dry, they will be non-adherent, and they will not be extensively stained with blood or serum. If, on the contrary, there has been some thawing of the carcasses it is obvious that moisture will be deposited on the surface of the meat, the cloths will adhere thereto, and on refreezing they will be frozen firmly to the carcass. If, therefore, when a large number of carcasses are examined, the cloths are clean and do not stick to the surface and do not show long lines of moisture or blood, it is permissible to assume that the meat is in fair condition. If there is any serious doubt an incision through the calico cloth over the convexity formed by the ribs in the forequarters, and over the hollow of the pelvis in the hindquarters, is advisable. If the changes have been pronounced mould growths may be found in these areas.

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* Being an abstract of part of a Chadwick Lecture on the Control of the Food Supply delivered at the Royal Sanitary Institute on Oct. 30th, 1925.

Recognition of Imported Meat.

As regards substitution there is but little difficulty in recognising even small joints of frozen meat; it often, however, requires a highly experienced man to decide with certainty that certain smaller cuts are chilled and not home-killed. Home-killed carcasses, as a rule, are clean, bright, and tidy in appearance, and carefully dressed. The stifle-joint is often cut across to allow of the escape of synovial fluid, and the fat in the pelvis is often skewered to make it hang in the form of loops. In some districts the carcass is divided into two parts by chopping through the vertebræ for their whole length; in others the spinal column is sawn down as far as the dorsal vertebræ, the remainder being chopped through. The cold and set home-killed carcass is dry and somewhat greasy. On section it will be observed that there is not a large amount of moisture in the tissues, the meat being moist but not wet. The fat is usually yellowish-white in colour, tolerably firm to the touch, and free from suspicion of wetness. The side of a home-killed carcass is generally divided into hind and forequarters between the twelfth and thirteenth ribs, thus leaving one dorsal vertebra on the hindquarter. In imported meat the quarters have never the same well-finished appearance as in home-killed; the spinal column is always sawn down through the whole length, and three ribs are left connected with the hindquarter. These ribs are frequently cut off and sold separately under the name of "wing ribs."

The appearance of a joint of chilled meat may be very little different from that of home-killed on the one hand, or from frozen on the other, according to the care which has been displayed in chilling, in transporting, and on the maintenance of a suitable temperature. At temperatures below 32° F. the meat will assume the characters of frozen meat. The fat of chilled meat often acquires a pinkish hue due to the exuding meat juices, but it may be unchanged except for some roughening of the surface and edges. The outside of the meat is of a dull slate colour where the muscular bundles are exposed. On section the meat shows some excess of moisture which is most apparent on pressure.

Frozen meat is readily recognised by its unfinished appearance; the fat is dead white in colour after defrosting; the carcass in the frozen state is rigid, and the finish in varying degree rough and ragged, owing to the carcasses being packed one on top of another in transportation. Unless previously thawed the outside will be found to be covered with moisture which has condensed from the atmosphere, and on section the muscular tissue is uniformly light in colour and has thus a washed-out appearance. It is moister than either home-killed or chilled meat, the amount of moisture depending partly on the care displayed in thawing. The exposed surfaces of the sawn bones are white in frozen meat; in chilled meat obtained from young animals of good quality they retain the rose-tinted appearance usually seen in freshly killed animals.

THE MEDICAL HAND IN MODERN INDUSTRY.

Dr. Peter Howie delivered a presidential address on this subject at a meeting of the Aberdeen Medico-Chirurgical Society held on Oct. 29th. He pointed out that, contrary to usual belief, recognition of unhealthy conditions of work and trade is no new thing. Hippocrates and Galen drew attention to the dangers of such occupations as mining, pottery-working, lead-smelting, and textile-working; Pliny informed us that in Roman times polishers wore respirators to prevent the inhalation of red lead dust. In 1557 Georgius Agricola, in a book "De Re Metallica," showed that dust in mining operations may produce asthma and even lead to conditions we now recognise as consumption. In 1700 Ramazzini, of Padua, published a book, "De Morbis Artificum Diatriba," dealing with diseases produced by labour and by certain occupations and professions. The removal of unhealthy conditions of trade is, however, another matter, and may more truly be claimed as a modern development. No preventive measures began to arise till the latter part of the eighteenth century, and no very satisfactory results followed till well into the nineteenth.

After describing the horrible conditions of child labour prevalent at the end of the eighteenth century, Dr. Howie referred to the Board of Health of Manchester formed after an inquiry led by Dr. Perceval in 1784, which may be regarded as the root from which all subsequent legislation dealing with the health side of industrial activity has sprung. In 1802 Sir Robert Peel introduced a Bill, which subsequently became law, entitled "Health and Morals of Apprentices Act." During the next 40 years much legislation followed, almost always in the teeth of strong opposition. In 1819 the age of children employed was limited to 9 years, with a 12-hour day for all under 16. In 1825 work on Saturday was limited to 9 hours. In 1832 the first work on the subject by a British medical writer, Dr. Turner Thackrah, of Leeds, was published on "Diseases of Workmen." In 1833 a Royal Commission was appointed to consider the subject, and soon afterwards an Act was passed whereby, among other things, State-paid factory inspectors were first appointed; certificates had to be granted by physicians and surgeons who had to declare the individual "to be of the ordinary strength and appearance of a child of 9 years." Here we had the origin of the certifying factory surgeons, though these were first officially appointed in 1844. During the latter half of the nineteenth century legislation was prolific, and more and more attention was paid to trades and occupations involving dangerous conditions. A Shop Hours Act in 1886 first brought that class of work under control. In a Factory Act of 1891 a specially important point emerged for the first time in that the employment of any woman within four weeks after childbirth was prohibited in any factory. In 1901 another important Act made it compulsory for every practitioner to notify not only the medical officer of health of the local authority but also the Home Secretary of the occurrence of any case of anthrax, and lead, phosphorus, mercurial or arsenical poisoning of industrial origin. The various Acts dealing with Workmen's Compensation are also of great importance, especially those of 1906 and 1918.

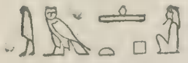
After this historical survey, Dr. Howie went on to consider under three main heads the results achieved and the main lines along which medical science is influencing working conditions and guiding legislative efforts. Considering first industrial activity in relation to the general health of the worker, he pointed out that this is essentially the question of industrial fatigue. The problem is being studied and attacked in many ways, and it is now realised that output can best be attained by health. Many tests are being applied in the endeavour to measure the degree and incidence of this industrial fatigue, and interesting results are being brought to light through this new industrial physiology. For example, observation is proving that rhythm is of the utmost value in work, both in preventing and delaying fatigue and in increasing output; rhythm relieves monotony and aids production. Scientific study of occupational movements is proving of the utmost value by showing where unnecessary movements may be eliminated and output therefore greatly increased. Workers and their machines, benches, or seats are being adapted to each other with excellent results. In many works regular rest periods are introduced, thus lessening monotony and bringing into play a degree of rhythm which seems to be useful in the prevention or delay of fatigue. Other factors are ventilation, temperature, humidity of atmosphere, and lighting, and these are all being studied and the results applied for the benefit of the worker.

After indicating briefly the importance of the different types of industrial disease coming under the cognisance of the Home Office, and those entitling to compensation, Dr. Howie considered the chief methods by which medical knowledge influences industrial conditions. He referred to official control by means of Parliamentary legislation and regulation by the Home Office, carried out through the instrumentality of the factory and mines inspectorate composed of men and women of high technical skill, with a medical inspectorate which is constantly studying conditions of labour and new aspects of disease conditions which might seem to be due to labour or the circumstances under which it is carried out, with the aid of many of the physiological and other laboratories in the country where industrial problems are sent to be solved. In addition, there is a numerous body of certifying surgeons throughout the country, undertaking the routine examinations, often assisting in special investigations, and possessing many powers for safeguarding young workers. There is, finally, the industrial welfare movement, which, beginning in small ways before the war, attained great importance during the war and reached such important dimensions that the Factory Acts now take cognisance of welfare work, and in many cases lay down certain minimum requirements. In large institutions this work is under specially trained and appointed supervisors, for whose training and qualifications the Home Office lays down certain regulations. After describing their duties, Dr. Howie referred to the Industrial Health Education Council, a body whose purpose is to "educate industrial workers on the diseases and sicknesses to which they are liable, with the view to investigating and preventing the same." This body, he said, will prove to be of much service in cases where it is not possible to have welfare schemes and supervisors. The method of work is by means of lectures to bodies of workers themselves, organised by their unions and similar organisations.

I-EM-HETEP.

To the Editor of The Lancet.

Sir,—The interesting annotation concerning this deity in your issue of Oct. 17th will give much pleasure to those of your readers who enjoy the enthralling history of ancient Egypt. The presentation by Sir Stewart Abram of a permanent jewel bearing on its face the image of I-Em-Hetep to be the badge of office of the President of the Reading Pathological Society leads me to mention that at the foundation of the Nosocomia Lodge of Freemasons in 1909, a Masonic home so to speak for hospital officers, the founders perpetuated the name of this medicine god on the Past-Master's jewel. This jewel was designed by Mr. Chichele Nourse, F.R.C.S. Edin., the second Master of the Lodge, who in his design had engraved upon one side of the square the hieroglyphics signifying I-Em-Hetep, "He who cometh in Peace," amongst his other titles being those of "Master of Secrets" and "Scribe of Numbers."



With this history I am sure the Reading Pathological Society will allow the founders of the Nosocomia Lodge to share in the honour of having been the first in this country to recognise the claim of I-Em-Hetep to be regarded as the Egyptian Deity of Medicine.

I am, Sir, yours faithfully,
Richard Kershaw.

Central London Throat, Nose and Ear Hospital,
Oct. 20th, 1925.

*** Most fascinating and instructive reading with special reference to I-Em-Hetep (or Hotep) will be found in the Harveian Oration delivered in 1904 by Dr. Richard Caton, entitled The Medicine and Medicine God of the Egyptians (The Lancet, 1904, i., 1769). We reproduced (1906, i., 855) two photographs of a statuette of this deity from the collection of Signor G. Dattari, of Cairo.—Ed. L.

PITCAN PATENT BELTS.

We have received from Messrs. Carew, Ltd., 47, Lower Belgrave-street, S.W., samples of abdominal belts, intended to reduce undue bulk, support the figure, and correct the results of ptosis, while they may also be used as aids in cases of hernia and conditions resulting from undue strain. The belts, which are well ventilated, are made of a strong durable material and are fitted to the body by means of laces and straps. The firm works, we are informed, only under the orders of medical men and our readers may find the address useful.

SNAKE POISONS.

Dr. A. do Amaral, of the Serum-therapeutic Institute, Sao Paulo, Brazil, has brought out a little book entitled "A General Consideration of Snake Poisoning and Observations on Neotropical Pit-vipers." (Harvard University Press. London: Humphrey Milford. 1925. Pp. 64. 16 plates. 10*s.* 6*d.*) The first part gives a general account of snake poisons, their action and remedies; it is brief and without any bibliography, and does not add much to previous accounts, such as Prof. C. J. Martin's article in Allbutt's "System of Medicine." This is followed by five papers on the diagnosis and variation of snakes of the genus *Bothrops*, useful, no doubt, to specialists, and beautifully illustrated with coloured and plain figures of the dorsal markings. Apart from their morphological interest these plates might be studied with advantage by those in search of new colour designs.

A CENTURY OF MARINE HISTORY.

The evolution of the sailing ship and the steam ship is of interest to medical men because the "sea voyage" is a well-recognised and often effective method of treatment. For this reason we call the attention of our readers to a well-printed and well-illustrated book[1] of some 80 pages which has been privately published in commemoration of the centenary of the Aberdeen S.S. Line. The compilation of the book has been entrusted to the well-known writer Mr. L. Cope Cornford, who in telling the story of the progressive development of the Aberdeen Line incidentally indicates how the proud position of British shipping to-day can be traced to the foresight, courage, and industry of men like George Thompson, founder of the Aberdonian venture in 1825. Among the fine illustrations of the company's vessels are the *Childe Harold*, 116 tons, one of the earliest of the fleet, and the s.s. *Sophocles*, 12,361 tons, one of the latest, with greatly improved passenger accommodation, and the contrast between the brig and the modern liner tells better than words the progress made in 100 years. The present fleet now sail regularly to and from London, Portsmouth, Tenerife, Cape Town, Melbourne, Sydney, and Brisbane. The same steamship line also issue a small illustrated brochure in which the story is told more briefly.

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[1] The Sea Carriers, 1825–1925: The Aberdeen Line. By L. Cope Cornford, with a preface by Viscount Burnham. Published by George Thompson, Ltd., 7, Billiter-square, London, E.C.

CONISHEAD PRIORY HYDRO.

Conishead Priory was founded during the reign of Henry II., and is situated two miles from Ulverston, by the shores of Morecambe Bay. It was dismantled by Henry VIII., and as a residence it passed through the hands of many famous families, notably the Braddyls, before being acquired as a hydro in 1878. The fine buildings, the beauty of the site and its proximity to the Lake District, combine to make the hydro attractive, and the directors have now newly furnished and decorated it throughout. There is an 18-hole golf course at Ulverston and hard and grass tennis courts in the grounds; dancing is provided for, and it is intended that the place shall be an ideally comfortable winter residence. The hydropathic department was reopened on Oct. 1st, under the direction of Mr. John Wishart, M.D., D.Sc., and contains electrical and other equipment. Sea-water is pumped up daily from Morecambe Bay for bathing purposes, and a new Conishead Priory health course will be given during any four weeks of the winter season at a minimum cost of 20 guineas, exclusive of medical fees.

THE LATE MAJOR-GENERAL SIR HARRY THOMPSON.

To the Editor of The Lancet.

Sir,—A wish has been expressed by relatives of the late Major-General Sir Harry Thompson, K.C.M.G., C.B., D.S.O., late R.A.M.C., that his services should be commemorated. They will contribute to that end. Knowing that, in addition, there are many of his friends (civil and military) who desire to join in some material tribute to his memory, I venture to ask your kindly aid in publishing this appeal for funds to this purpose. The decision as to the most suitable form for the memorial to take should, it is considered, be left in the hands of the Harry Thompson Memorial Committee, who will be guided by the sum collected and the wishes expressed by the subscribers. Subscriptions should be sent to Messrs. Glyn, Mills and Co. (Holt's Branch), 3, Whitehall-place, S.W., the treasurers of the fund, or to the undersigned. All contributions will be acknowledged.

I am, Sir, yours faithfully,
S. G. Guise-Moores,
Major-General.

Osborne House, East Cowes, Isle of
Wight, Nov. 1st, 1925.

UMBILICAL HERNIA.

To the Editor of The Lancet.

Sir,—I am in my eightieth year and have long suffered from an umbilical hernia, of about the size of an ordinary walnut on protrusion. I have consulted many of my London medical friends about it and they have all taken a great deal of trouble, recommending belts of various descriptions. The belts all get out of position after a little time unless they have perineal bands, which are an abomination. For several years now I have been in the habit of applying a cotton-wool pad covered with indiarubber over the hernia after first reducing it. The pad is kept in position with one inch wide strips of "ZO" adhesive plaster, made by Johnson and Johnson, New Brunswick, N.J., U.S.A., and I have found that this never irritates the skin and only wants changing once a fortnight, although I have a warm bath every morning. I enclose my card, and am, Sir,

Yours faithfully,
M.R.C.S.

Oct. 28th, 1925.

THE WINDOW WITHOUT A VIEW.

To the Editor of The Lancet.

Sir,—Recently I paid a visit at a charming house which had been built but a few years. Opening the gate leading from the road, a tasteful garden met the eye; and a path, paved with crazy stones, led to the old-fashioned door. The external architectural features were pleasing. Little turrets, circular windows, overhanging eaves, and tiled roofs all combined to form a pleasant picture. I was shown into a prettily furnished drawing-room, and later conducted by the lady of the house into a large study with a wonderful fireplace, and into other rooms well designed. Everything seemed just right. But no! There was something wrong. We sat down and our hostess said she would like my opinion of the roses in the garden just outside. I could not see any roses. I could not see any garden. The fleecy clouds floating in the blue sky were visible, but that was all. You ask "Why?" Because the windows were set so high. One had to stand up to see out. I was told the bedrooms and nursery had the same fault, and a platform had to be built for the children so that their heads could be above the window level. The value of plenty of light and air has never been recognised so clearly as at the present time. It is hoped that architects, besides making provision for an abundance of these, will give us a view. We don't want to live in a glorified prison.

I am, Sir, yours faithfully,
Medicus.

Nov. 2nd, 1925.

An Address
ON THE
SPECIFIC CHARACTER OF MALIGNANT NEOPLASIA,
WITH SPECIAL REFERENCE TO THE CONTROL OF CANCER FROM THIS STANDPOINT.

Delivered before the Academy of Medicine, Toronto, on Nov. 10th, 1925,

By W. BLAIR BELL, B.S., M.D. LOND.,
PROFESSOR OF GYNÆCOLOGY AND OBSTETRICS IN THE UNIVERSITY OF LIVERPOOL; GYNÆCOLOGICAL AND OBSTETRICAL SURGEON, ROYAL INFIRMARY, LIVERPOOL; HON. DIRECTOR, LIVERPOOL CANCER RESEARCH; HON. FELLOW, AMERICAN COLLEGE OF SURGEONS; HON. FELLOW, AMERICAN GYNÆCOLOGICAL SOCIETY; HON. PRESIDENT, GLASGOW OBSTETRICAL AND GYNÆCOLOGICAL SOCIETY.

IN the whole range of medical science there is nothing of greater interest and importance than the control of malignant disease. Even so, and in spite of the fact that I have expended much thought and energy for 17 years in attacking this question, I find it necessary to summon all my courage to deal in words with a problem so difficult, so engrossing, so momentous, and, I may add, once so contentious. Those of us who enter the arena in the fight against cancer must do so unfettered, having purified our minds of all preconceptions and prejudices. At the same time we must avoid attaching undue significance to every little detail that comes to light as the result of our own work or of that of others; the winnowing of the chaff from the grain must be relentless and thorough.

Now, in regard to the problem of malignant disease, unfortunately there has been a tendency to consider each fresh and important observation as "the solution of the central problem," instead of merely as a step in that direction. For instance, supposing that an absolutely specific causal factor, effective at will, were to be demonstrated, it by no means follows that the cancer problem would be settled. I need not refer to the numerous instances in medicine of such failures; they are well known, and it is interesting to reflect that in many of them the position, unlike that of cancer, has been, or has appeared to be, comparatively simple.

THE CANCER PROBLEM STATED.

The problem of cancer can only be the complete understanding and control of that divergence from the normal, both from preventive and curative points of view. This, indeed, is the "central problem," whether scientifically or practically considered; this, and not every fresh quest after the so-called cause or causes of cancer.

The solution of every large problem—as of those of Euclid—is dependent on the correct application, step by step, of a number of related demonstrata that lead to the final proof. We have long been in possession of a sufficient number of isolated facts from which to elucidate the final solution, if only they had been properly sorted and placed in their true perspective—that is, if we had known how they should look when placed. This is the history of every scientific achievement. The whole question of malignant neoplasia is so complex, and the appreciation of the possible mechanisms concerned requires such a wide range of knowledge, that it is not difficult to understand how it comes about that most investigators have been content to stumble along after one issue, whereas Pasteur, if he had attacked the problem, would have tried to visualise first the complete picture; he would have formed a substantial working hypothesis.

If clear thinking were ever needed it is surely essential to the solution of this problem; yet, as the result of the limitations mentioned, the most important aspect—namely, the *specific process*, as I call it—has been neglected in the hunt for a specific cause, or for specific causal factors acting in conjunction. Still, it is the result rather than the cause, as I hope to show, that is important, for undoubtedly malignant neoplasia is a specific process, but that is not to say that because a process is specific the cause must also be. Those who ascribe specific processes to specific factors are on hazardous ground, for there is plenty of evidence that specific processes of a similar character to that we are discussing—such as the development of an ovum—may be induced by many inciting factors. Indeed, it might as well be argued that because warmth may be a condition necessary for such a change it is the specific agent, whereas it may simply be a condition of environment.

Those of us who are sceptical in regard to the idea that a single specific causal agent, or a combination of two specific causal agents or factors, is inevitably responsible for malignant neoplasia, are fortified by much positive evidence that such factors are numerous. Nevertheless, we are always ready to accept, as we have done in the past, evidence of a newly discovered agent, which is capable of establishing one or more of the conditions necessary for the development of malignant disease.

If it be granted, as it is by a majority of investigators, that the inciting factors of malignant growth are many, it is reasonable to avoid, as we ourselves have done, that aspect of the subject, leaving to others the compilation of an encyclopædia of causes, and possibly the discovery of a factor common to all, in order to concentrate our energies on the consideration of the *nature of cancer*, which appears to be a specific process in itself, and of far more importance than the character of the exciting stimuli.

THE NATURE OF CANCER.

To the biologist growth is a process which is fundamentally similar, whatever its direction, character, or result may be. Theoretically, growth should be continuous and immortal. Practically, it may be persistent or discontinuous, and it is inevitably mortal, in the ordinary sense of the word. Malignant neoplasia differs not at all from differentiated growth in these respects. It is impossible, therefore, to regard neoplasia of a malignant character without taking into account innocent neoplasia and normal growth.

Normal somatic and differentiated growth of the individual is due to intrinsic stimuli acting under the influence of many conditions of environment, both relative—that is, relative so far as one cell influences another which may be adjacent: for example, the formation of the ectodermic structures of the teeth and eyes in relation to the underlying mesoderm—and general, in that the whole metabolism of the body is correlated and adjusted by adaptation to the surroundings, and is perpetuated by heredity.

The development of an innocent neoplasm is similarly situated; and it is impossible to separate a benign growth from simple hyperplasia which arises in normal, healthy cells as the result of increased normal intrinsic stimuli or adventitious, extrinsic stimulation acting on *healthy* cells—that is, cells that are in function fundamentally normal.

In malignant neoplasia the same factors are at work, but the condition of the cells on which they act is different, and the difference appears, from the evidence at our disposal, to be that the cells in which the abnormal development occurs are *not healthy.*

If we consider for a moment the statements I have just made it becomes obvious that they are too general in regard to malignant neoplasia. The view that innocent neoplasia arises from healthy cells is clear enough; but simply to say that the cells from which malignant neoplasms originate are unhealthy is too vague without amplification. By unhealthiness of a cell I mean, then, that for some reason it is not functioning normally. Now, the functions of a cell are twofold: in the first place it has functions in respect of its own individual metabolism; and, secondly, it possesses properties and activities in relation to the body as a whole, of which it is a unit.

What, then, happens to and in a cell driving it to adopt an unnatural, malignant, course of life? A healthy cell does not do this, a dead cell cannot. There is, however, an intermediate state. The cell functions are impaired. Whatever causal factor, whether metabolic or extrinsic, can permanently impair the cell, without killing it, may be regarded as a predisposing cause or "exciting factor" of malignant developments. When a cell is damaged by X rays it either recovers, develops abnormally, or dies. When it develops abnormally we may regard it as a process which implies a struggle for existence.

To understand the nature of this process—the struggle to survive—we must go back to the beginnings of growth in the individual, study them, coördinate our observations with the known facts of normality and abnormality, and find if there is anywhere a clue to the divergence from the normal that may be regarded as, what I may perhaps call, normal malignancy.

It will be remembered that in the mammalian ovum, long before the formation of the embryo begins, the collection of cells, into which the fertilised ovum has developed, receives its nourishment from the saline fluid with which it is surrounded; but that this is soon insufficient for the needs of the mass, undergoing rapid division, a phenomenon not unallied to the struggle for existence. Some further and better supply of food is required, otherwise the ovum will die. In ordinary circumstances the blastocyst attaches itself wherever it may be at the moment necessity urges, and draws its nutriment from the maternal tissues.

In the human subject this process may be fraught with dangers of various kinds, not the least of which is the absence of the inhibitory factor which prevents the invasion of the trophoblastic cells exceeding the normal limit, and developing into an abnormally malignant process.

If I may do so, without wearying you, I will quote a statement already published in special and, therefore, not readily accessible journals, for it expresses briefly and completely our views of the nature of malignant neoplasia:—

> "Malignant neoplasia in the human subject, as I see it, is a biological atavism. There is a time in the development of the ovum when somatic cell-correlation and differentiation can hardly be said to exist, except potentially. At that early stage the trophoblast, of which the ovum is largely composed, is engaged in a struggle for existence; unless it can eat its way into the maternal tissues, the whole ovum will perish. The zygote possesses, therefore, the power of developing into cells of two types, the undifferentiated nutritive cells and the differentiated somatic cells.
>
> "Normally, when satisfactory attachment has been obtained, and the maternal blood-vessels have been eroded with dispersion of the circulating blood of the mother among the advancing columns of trophoblastic cells, the area in which the fœtus is to develop grows rapidly, and pari passu the activities of the trophoblast, so far as plastic and invasive properties are concerned, are gradually arrested. Thus it appears that, when the elusive factor in somatic cell-correlation becomes operative and ensures normal and differentiated development in the fœtus, the growth of undifferentiated, 'malignant,' epithelium of the chorion is stayed. It is the nature of this controlling factor that we are endeavouring to determine.
>
> "Should the fœtus die and the supply of somatic 'correlating secretion' cease at a critical time in the period of control, the chorionic epithelium, suddenly relieved of the inhibitory action of this substance, may develop into that most unrestrained and malignant manifestation known as chorion epithelioma.
>
> "The chorion, as I have indicated, has a nutritive function, and to the epithelium is assigned the task of seeking and finding nourishment not only for its own metabolism, but also for the correlated and differentiated somatic cells of the embryo, which in turn send a hormone, we may presume, to restrain chorionic activity once a large enough source of food-supply has been tapped.
>
> "In view of the method of implantation of the ovum in the human subject, and of the origin of chorion epithelioma, it seems reasonable to suppose that cells of somatic tissues, formerly normal, may through senility, injury, infection, and the other inciting and predisposing factors of cancer, slowly lose their power of obtaining or utilising nutriment, and, as the process of starvation is a slow one, adjust themselves to the altered and altering conditions by reverting to an earlier undifferentiated chorionic, nutriment-seeking type.
>
> "It is probable that every cell in the body has this potentiality of atavistic reversion to the nourishment-providing proclivities normally possessed in a special degree by the chorionic epithelium. Once started on the perverted course, there is no reason why the growth of dedifferentiated somatic cells should be arrested, for like those of chorion epithelioma, they are free of differentiated, somatic control." [1]

This is a definite hypothesis founded on the facts of development as they are known to us. It is impossible to go back further in our search for phenomena, associated with growth, that have a bearing on malignant developments.

We have endeavoured to bring fresh light to bear from various aspects of the problem, and we have tried to discover the physiological cause or causes leading to the arrest of the active functions of the chorionic cells, once they have fulfilled their purpose. It seems likely, of course, that the factors governing the differentiation of the somatic tissues of the embryo control the activity of the chorionic epithelium. There is, indeed, much evidence in support of this view, such as the invariable absence of a live embryo in association with chorion epithelioma. Yet a long series of experiments which I conducted, many years ago it is true, failed to confirm or to refute this view. I am inclined to blame the conditions or the conduct of our work for the negative result.

It will not be out of place to emphasise here a few facts of clinical and pathological importance that have a bearing on, and, indeed, lend support to the hypothesis I have endeavoured to develop, before I pass on to a consideration of the experimental and clinical confirmation that we have been able to secure.

It will be remembered that I have referred to the fundamental similarity of all growth processes, pointing out that the earliest ancestral cells—the trophoblastic—are of sheer necessity malignant in character, and that the most malignant type of growth of which we have cognizance is due to the uncontrolled, riotous behaviour of these cells. On the other hand, there are innocent tumours arising in the differentiated tissues of the body, apparently as the result of increased stimulation of normal healthy cells; in other words, hyperplasia occurs.

Then there are certain growths which appear to lie between the innocent and malignant; for example, papillary tumours of the ovary. How can we fit these into our scheme, which might on casual inspection appear to demand such a clear-cut line of demarcation between innocent and malignant neoplasia that the two could not exist in the same tumour? There is, as I have stated, a most essential difference between innocent and malignant neoplasia, apart from the inherent similarity of all growth processes; but this does not exclude the possibility of a malignant development in an innocent neoplasm, as may occur in the hitherto normal, differentiated tissues of the body.

It seems highly probable that, when such a change takes place, the cells of the tumour, previously innocent, have outgrown their blood-supply, or have suffered some other form of metabolic disturbance, with the result that, if necrosis does not occur, they may take on a malignant form of life. This change from innocency to malignancy is most commonly seen in growths of a "cellular type," as we describe them, whether epithelial or mesial in structure.

In passing, it is interesting to note that, just as al primary tumours, innocent and malignant, conform more or less closely to the kind of tissue from which they arise, so the structure of a malignant neoplasm developing in an innocent neoplasm resembles the tissue type of the latter; and it is this conformity that sometimes creates the difficulty of deciding whether a tumour is innocent or malignant.

In this connexion it may be said that the more nearly the structure of a malignant growth approaches that of the somatic tissue in which it is developed so much the less virulent is it. Those neoplasms that bear in their texture an appearance resembling that seen in an early phase of the normal development of the tissue in which they arise are most malignant. It is, indeed, axiomatic that the nearer to the trophoblastic phase the character of the neoplastic cell, the nearer will a growth approach in malignancy the intense degree exhibited by the unrestrained chorionic epithelium.

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[1] Bell, W. Blair: Public Health, 1924, xxxvii., 217; Jou Obstet. and Gynæcol. Brit. Emp., 1925, xxxii., 1.

If the statements I have made are correct and the conclusions based upon them are sound, we are justified in regarding the malignant change as a process that is quite specific in character. It is hardly likely that, if the working hypothesis I have enunciated above had been a crude guess, instead of the result of the consideration and correlation of known facts, substantiation of our views would have followed in such generous measure as has been the case. To this I shall now refer.

CONFIRMATION OF THE HYPOTHESIS.

It is always advisable in seeking confirmation of any biological conception to approach the issue from as many directions as possible. This was foreseen when money was provided by a few generous laymen in Liverpool for the purpose of verifying or refuting my views; and as a result a staff of distinguished men, the heads of departments in the University, were invited to coöperate in the prosecution of this important inquiry under my direction. The harmony that has existed and the very intimate interchange of ideas, have, I venture to think, led not only to the output of most valuable original work but have also gone far to place the hypothesis enunciated beyond direct criticism. A considerable amount of work still remains to be completed and developed, provided the means are forthcoming to keep this organisation in being.

The scope of our research work has involved studies in physical chemistry, under the control of Prof. W. C. McC. Lewis; in biochemistry, which is, after all, chiefly physical chemistry, under the joint supervision of Prof. Lewis and Dr. R. Coope; in pharmacology and toxicology, under Dr. W. J. Dilling; in pathology, by Prof. Ernest Glynn; in animal experimentation, by Dr. H. E. Annett; and in the treatment of cancer in the human subject by a group of physicians and surgeons.

In three years about 50 private interim reports have been circulated by members of the staff to their colleagues, and some of these deal with several subjects. So far only four papers have been published, but a number are ready or being prepared for the scientific press. In many instances the lines of inquiry overlap or are dependent one on the other. Much of the work is of a highly technical character, and cannot be suitably described in a few general terms. I am unable, therefore, to do more at this time than touch upon some of the results obtained that supply direct confirmation of our hypothesis.

PHYSICAL AND BIOLOGICAL CHEMISTRY.

In an earlier paper I stated that it appeared probable that lead—a metal to which I shall have to refer at some length directly—has an affinity[2] for the phosphatides and other lipins; and that these substances are probably present in malignant growths in larger quantities than in normal somatic tissues. In a communication of Gye and Cramer,[3] based, it is true, on insufficient material and, therefore, on somewhat inconclusive evidence, the general statement had been made that the more rapidly growing a rat or mouse tumour the greater the phosphatide content. No comparison with normal or other tissues was made by these workers. Their statement was based on the examination of one slowly growing transplantable mouse tumour and one that was rapidly growing, and of one rat sarcoma of rapid growth. It was almost a matter of luck that this conclusion turned out to be correct; but it might easily not have been so, for the variations that occur in similar normal and malignant tissues are considerable, and only by averaging a large number of estimations can a true conclusion be reached. Alone, however, even this finding is not of any great value; it is the relative character of the phosphatide content of tissues that gives such estimations their great importance.

Prof. Lewis and his associates[4] concentrated their efforts in the first place on an experimental examination of the functions of phosphatides and cholesterol in relation to the permeability of the cell membrane. Stated briefly, it was found that whereas a high lecithin content favours an oil-dispersed-in-water variety of emulsion, cholesterol favours a water-dispersed-in-oil type. When, as in cell membranes, these are present together and in the conditions believed to exist—namely, that lecithin and cholesterol are dissolved in different phases, that is, cholesterol in oil and lecithin in water—then a high lecithin-phosphatide ratio would indicate a high degree of permeability of the cell membrane.

This conclusion reached, it became a matter of importance to determine the water, the phosphatide and cholesterol content of normal human tissues, and of innocent and malignant neoplasms *of the same tissues*, and, also, in view of the general hypothesis to make similar analyses of chorionic villi.

This laborious task has been accomplished, some 36 specimens being examined. The very striking results obtained are summarised in the following table :—

Human tissues examined.	Water.	Phosphatides.	Phosphatide-cholesterol ratio.
Normal tissues (ovary, body of uterus, cervix) ..	77·5	2·86	2·8
Innocent neoplasms (ovary, uterus) ..	80·8	2·94	3·4
Malignant neoplasms (ovary, body of uterus, cervix) ..	81·6	4·4	3·6
Chorionic villi ..	89·9	6·84	4·7

In regard to these figures it should be stated that in a general way it is impossible to separate cancerous cells in malignant neoplasms from the supporting and surrounding normal tissues. If cancerous cells are mixed with normal tissues in the proportion of, say, 50 to 50—a figure that would undoubtedly favour the normal tissues—the values for malignant tumours would approach more nearly those for chorionic villi, which also contain a core of connective tissue that may have reduced the value of the figures standing to their credit. In short, chorionic epithelium and malignant cells in all probability have values in regard to the phosphatide content and phosphatide-cholesterol ratio not less than three times that of normal tissues and innocent neoplasms, and also a much higher water content.

Now, as we have seen, permeability of the cell membrane is associated with a high phosphatide value and a high phosphatide-cholesterol ratio. Further, a high water content is actual evidence of permeability, and permeability is favourable to rapid growth. These are the essential features of malignant neoplasia, and they are most noticeable in connexion with chorionic villi, which in the early stages of development are entirely, or chiefly, composed of chorionic epithelium.

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[2] "Although I have suggested that the rôle played by lead in the phenomenon of arrested growth depends on a direct chemical reaction between lead-ion and phosphatides, we must not overlook the possibility that lead may act in other ways; for example, by the inhibition of enzyme action in relation to growth. The distinction between these effects, however, may not be so great as appears at first sight, since such a function of lecithin as, for instance, that of an oxygen carrier, might indirectly affect enzyme action."—THE LANCET, 1924, i., 267.

[3] Bullock (Gye), W. E., and Cramer, W.: Proc. Roy. Soc., B, Lond., 1913, lxxxvii., 239.

[4] Corran, J. W. and Lewis, W. C. McC.: Biochem. Jour., 1924 xviii., 1364.

Here, then, is unassailable confirmatory evidence of the views already expounded.

INHIBITION OF NORMAL GROWTH.

We have conducted investigations on several lines to test the effect of various substances on cell growth.

Vegetable Growth.—J. Patterson and the present writer[5] have observed in the case of hyacinths that, if the bulbs be immersed in solutions of lead, a graded effect in the growth of the roots can be obtained, according to the strength of the solution; and with solutions so strong as 1·0 per cent. the subsequent growth of the plant is almost entirely inhibited. It is, too, of remarkable interest that, if the bulbs used for experiment be dried and kept in the ordinary way until the following year, and then be placed in ordinary tap-water, they repeat exactly the phenomenon of arrested growth seen the previous year when they developed in lead-poisoned water.

A chemical examination of dried bulbs that have developed in lead solutions reveals the presence of lead. It is obvious, therefore, that the lead has become bound up with or has affected some body of importance to the normal growth process, whether of the cell membrane or the cell itself, and that even a year later limited growth alone is possible. It has been stated by various observers that seeds are rich in phosphatides, and there is little doubt that the same high proportion should obtain in bulbs, but we ourselves have not made estimations.

This work was carried a stage further by the investigation of the effects of other metals on the development of hyacinths. The ions of copper, zinc, and calcium were tested, and were found to produce certain effects on growth; but these were not really comparable with the effects of lead. Zinc and calcium appeared to be very toxic in the stronger solutions —that is, solutions containing from 0·001 to 1·0 per cent. of the metallic salt. Root growth was practically absent, and in only one case did flowering occur. In weaker solutions the root growth and flowering were unaffected. The same results were obtained with calcium salts. Copper, however, was extremely toxic, and in strengths of copper as low as 0·000 001 per cent., growth of the plant was entirely prevented. It appears likely, therefore, that zinc and copper are directly poisonous, and have no true graded effect in various solutions; they appear either to kill or not to interfere with growth at all. Calcium probably acts by reducing permeability of the cell membranes.

Dr. W. J. Dilling has conducted experiments of a similar character in regard to the germination of seeds (mustard and cress) and obtained somewhat similar results.

Animal Growth.—Dr. Dilling and his fellow-workers have conducted an important series of investigations on the development of frogs' eggs, on the subsequent growth of the tadpole, and on the growth of fish, when placed in water containing the salts of certain metals. He summarises the experiments on frogs' spawn and tadpoles as follows:—

1. *Beryllium.*—Non-toxic.
2. *Zinc.*—Does not arrest the development of frog spawn, but is either lethal to or delays the growth of tadpoles.
3. *Thallium.*—Does not arrest development, but is fatal to tadpoles.
4. *Copper.*—Does not arrest development, but further growth is checked at or about birth. Slows subsequent growth of the tadpole or is fatal to it.
5. *Thorium.*—Development arrest, but to a less degree than lead. No arrest of growth of the tadpole.
6. *Lead.*—In solutions of N/10,000 and stronger, lead completely arrests the development of eggs and checks the growth of the tadpole.

In connexion with the action of lead it may be stated, therefore, that in its effect it is much more definite and comprehensive in its selective specific effect on all growth than is the case with any other metal; indeed, it is the only metal that arrests development of the ovum, and stunts growth subsequently.

In connexion with the action of lead on the tadpole, I cannot refrain from quoting an interesting statement from a report of Dr. Dilling:—

> "The second point of interest noted was that arrest of development almost invariably resulted when the egg was at the reniform stage, which corresponds with the late gastrula stage of the embryo, and it was also observed that, if the embryo passed this stage, it generally progressed to hatching, even if it then succumbed. At the late gastrula stage, when these embryos died, the hypoblast is being formed at the expense of the yolk cells which later form a heaped-up mass on the ventral wall of the archenteron to be finally absorbed a day or two after hatching, by which time the mouth has opened. In view of the suggestion of Blair Bell (THE LANCET, 1924, i., 267) that lead arrests growth by a chemical reaction between the lead ion and such a phosphatide as lecithin, the fact that the yolk cells are rich in lecithin must be borne in mind. It may be that lead by combining with the lecithin in the yolk cells arrests by its toxicity further development of the hypoblast, and that this leads to death of the embryo. Presumably, on this theory the embryo would be most vulnerable if the lead reached it before the yolk cells were finally covered by epiblast, that is, just before the stage at which the embryo becomes ovoid or reniform. If, however, the lead does not reach the embryo until the yolk cells and yolk-containing hypoblastic cells are completely protected by the epidermal layer of epiblast, it is reasonable to expect, if Blair Bell's theory that the lecithin is the medium through which lead arrests growth, that the embryo would probably survive and develop to the tadpole stage, and this is, in fact, what has been observed. Then at the tadpole stage, when it comes into direct contact with the poisonous solution, it may succumb by absorption of lead through the external gills or mouth. At present, these must remain as suggestions to account for the observed facts; further work may confirm or disprove them."

The observations on the growth of plaice in lead-poisoned water gave similar results; the growth and vitality of the young fish were reduced, and the effect persisted after removal of the plaice to a normal medium. Finally, it is well known that children poisoned with lead are stunted in their growth.

We have, then, a large series of observations on normal growth, all pointing to the important—I think specific—action of lead on the growth processes.

EFFECT OF LEAD AND OTHER METALS ON THE CHORION EPITHELIUM.

Dr. Hendry, Dr. Annett, and the present writer have published a paper[6] on this subject, giving the results of our experimental inquiry. It has, of course, long been known that in lead-workers abortion is extremely common. The cause for this has been attributed to hæmorrhages in the uterus. I suspected and found many years ago that the action of lead was due to a specific effect on the chorion epithelium, but owing to the war the work was stopped, and my results were not published.

In our recent experimental investigations we demonstrated that, in rabbits, lead alone of all the metals tested—namely, lead, thorium, thallium, and copper—has a specific action on the chorionic epithelium: coagulation necrosis is produced in the cells, and, as a result, abortion takes place. If abortion occur after the other metals it is due to hæmorrhages in the uterus.

If we recall for a moment the table concerning the water and phosphatide content of normal malignant and chorionic tissues we will realise the importance of the investigation I have just mentioned and its bearing on our hypothesis and the problem resulting from it.

ACTION OF LEAD ON MALIGNANT GROWTHS.

We have now reached the final issue. If my hypothesis concerning the fundamental similarity of all growth processes in animals is correct, and if we find a substance that will arrest or be lethal to all, and also shows an increasing degree of toxicity towards growing tissues in direct proportion to their rapidity of growth and malignancy—that is, to the water, phosphatide content, and phosphatide-cholesterol ratio—then surely we have arrived almost at the end of our endeavour.

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[5] Bell, W. Blair: THE LANCET, 1924, i., 267.

[6] Bell, W. Blair, Hendry, R. A., and Annett, H. E.: Jour. Obstet. and Gynæcol. Brit. Emp., 1925, xxxii., 1.

Will our work stand the final test: Does lead arrest malignant disease in man? Here, indeed, is the crux of the central problem. I can assure you that in this respect also we have the fullest confirmation of all I have said. By "fullest" I do not mean that we can cure every case of malignant disease. We cannot; that, unfortunately, will never be possible, as all those who deal with the disease must know. In the cure we may sometimes kill. I have in mind two cases, the first that of a young man with diffuse sarcoma of the stomach, as proved by laparotomy and histological section. The treatment by intravenous injections of lead caused total liquefaction of the stomach, and he died with acute peritoneal symptoms. At the post-mortem examination Prof. Glynn could find no stomach, simply a mush of dead tissue. The second case was that of a woman with a large, rapidly-growing post-cricoid carcinoma. After treatment the entire growth became œdematous and she was suffocated. At the post-mortem examination it was found that the entire tumour had undergone acute necrosis.

Some would say, What further evidence than that is required? If it is, we have it in the fifty or so patients who are believed well, out of about 200, mostly hopeless, cases treated. We have not selected our patients in any way. We have treated practically all who have been sent to us. Many have died within a few weeks of their arrival, before treatment had been hardly more than just begun.

I know you will want to hear very much about our successes. In the next month or so these will be published in THE LANCET. However, I may perhaps risk wearying you and mention two, for we have been fortunate enough to make for them yesterday and to-day days of thanksgiving.

On Nov. 9th, 1920—five years ago yesterday—a woman was admitted to my maternity ward at the Royal Infirmary, Liverpool, for her confinement, which took place a few days later. She was suffering with an extensive, ulcerated carcinoma of the left breast with glands in the axilla. Operation had been considered useless six months previously by two of my surgical colleagues. The growth had been accelerated during pregnancy, as is usual in these circumstances.

I was looking for just such a hopeless case. A section was prepared from a piece of tissue adjacent to the ulcerated area, and intravenous injections of lead were given. Not only is the patient well to-day, five years and one day later, but also she has had two more babies in the interval, both of whom she has suckled at the breast that was affected.

For sentimental reasons of a different character I may tell you about another patient who is now 38 years of age.

This lady was sent to me over a year ago. She had submitted to an exploratory operation at the hands of another surgeon. He found the abdomen full of malignant growth, which he correctly diagnosed as sarcoma, and promptly closed his incision. When she came to Liverpool, thin and ill, I reopened the abdomen to obtain a piece of growth for section, for this had not been done at the former operation. I, too, found the entire abdomen involved. Intestines were mixed up in the growth, and the whole outlook seemed most serious. In ordinary circumstances she had a few weeks to live, for sections showed the growth to be a most rapidly growing spindle-cell sarcoma. Treatment with lead injections has led to a considerable decrease in the size of the tumour, while the patient has herself increased in weight by 21 lb., and is now in robust health and without a symptom. She has been married to-day—November 10th.

CONCLUSION.

I have undertaken to present to you some of the confirmatory evidence obtained by a band of fellow-workers, that the hypothesis expounded is not only correct in its essential particulars, but also from every possible angle, including that of the ultimate test, it appears to be—may I say—proven.

I set out to show you that malignant neoplasia is a specific growth process in that it is a reversion on the part of the starving cell to the nutriment-seeking proclivities of its ancestral type, the chorionic epithelium.

A comparison between the chemical constitution of different tissues in regard to the factors concerned in growth processes demonstrates clearly not only that malignant tumours are richer in this respect than the corresponding normal structures and innocent neoplasms of the same parts, but also that the physiologically malignant chorionic villi show even higher values than pathologically cancerous tissues. The chorionic epithelium is super-malignant.

In the search for a substance that will arrest or have a specific lethal action on cells which possess the chemical constitution associated with malignancy we have found only lead. This metal is specifically active in regard to the chorionic epithelium, to the cells of cancerous growth, to normal embryonic growth, and to mature cells rich in phosphatides.

Some day we hope that a substance, less toxic to the organs of the patient that are rich in phosphatides, and even more effective than lead in arresting and destroying cancerous tissues, will be found. If that should ever happen, and it is not unlikely, we shall have still further confirmation of our belief that causes are as nothing in comparison with the importance of the realisation that malignant neoplasia is a specific process of the nature, and subject to the control I have described.

Bradshaw Lecture

ON

GASTRO-JEJUNOSTOMY.

Delivered at the Royal College of Surgeons of England on Nov. 11th, 1925,

BY JAMES SHERREN, C.B.E., F.R.C.S. ENG.,
VICE-PRESIDENT OF THE COLLEGE; SURGEON TO THE LONDON HOSPITAL.

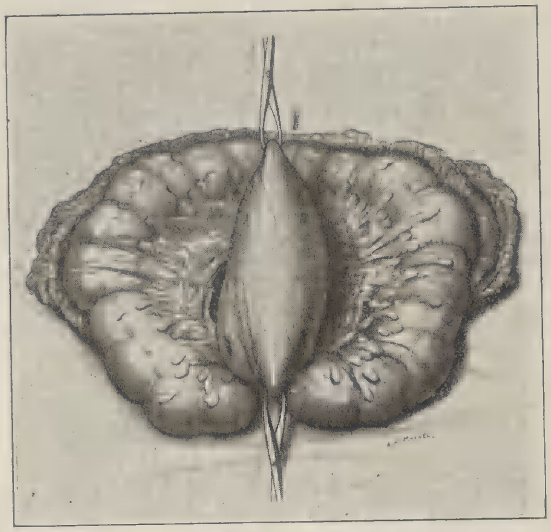
I MUST apologise for having selected an operation as my subject. I did so because of a firm belief that gastro-jejunostomy has had a more profound influence on abdominal surgery, and has done as much, if not more, for the good of the human race than any surgical procedure. On the other hand, carried out in unsuitable cases, or in suitable cases in an incorrect manner, it has, I regret to say, done as much, if not more harm, not only to the patient but to surgery in general than any operation. In suitable cases and correctly applied it has altered the whole outlook of countless chronic dyspeptics, and saved numerous valued lives for long service to the community. In addition to its widespread influence on abdominal surgery, the light it sheds on the ætiology of ulcerative lesions of the stomach and duodenum and on the cause of their symptoms was also a factor which convinced me, and I hope will convince you, that its study is eminently suitable for a Bradshaw lecture.

The present time seems opportune to review the matter, as from many sides we hear of its failure to cure conditions that are found curable by its aid in the hands of other surgeons. We have large and complicated procedures devised to supplant it, procedures that carry with them a mortality greater than that of the operation under discussion, and I venture to say that the death-rate of these would at least approximate to that of gastro-jejunostomy and to all its unsuccessful cases if they were considered as fatalities. Not even the most ardent advocate of these new operations would claim that every survivor was cured.

I should like first to draw your attention to a few points of historical interest. It was first carried out on Sept. 28th, 1881, in Vienna, by Anton Wölfer,[1] while assistant in Billroth's clinic. The patient was a male of 38, Michael Gold, surely a name to be remembered in the annals of surgery. He was suffering from pyloric carcinoma. Convalescence was uneventful and he was reported well four weeks later. The second case was done by Billroth himself on

Oct. 2nd, the patient being a man of 45. Bilious vomiting supervened the following day and continued until death on the tenth day. A post-mortem examination showed spur formation. Thus, the distressing post-operative symptom of regurgitant vomiting appeared early in its history. The course of abdominal surgery might have been different had this been the first case operated on. A surgeon must be thoroughly convinced of the soundness of his conception and its potentialities who would attempt it a second time in the face of such a result. The first successful gastro-jejunostomy in this country was carried out by Barker[2] for carcinoma of the pylorus on Jan. 5th, 1886. A day previously Morse,[3] assistant surgeon to the Norfolk and Norwich Hospital, had done a similar operation and both surgeons sutured the jejunum to the stomach before opening them. It was first performed in this country at the London Hospital by Reeves [4] on May 9th, 1885, on a woman of 40, with carcinoma of the pylorus. It is difficult from the brief account to follow exactly what was done, but it was a two-stage operation. I have been unable to obtain any information other than the short note published, and a careful search of the hospital records and operation books has not enabled me to trace the patient.

Fig. 1.



Showing the posterior surface of the stomach brought through the mesocolon and held vertically from the greater to lesser curvature, ready for the application of the clamp.

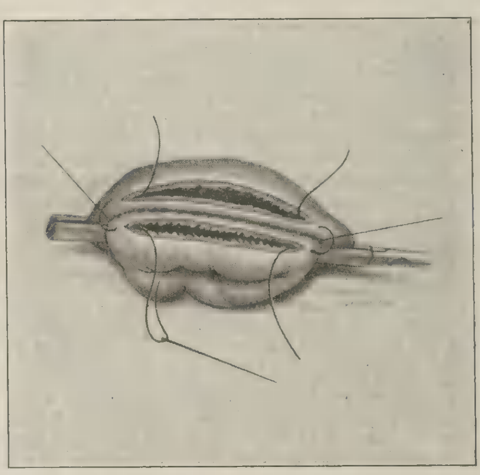
Carried out first for the relief of symptoms in irremovable carcinoma of the pylorus, it has been used in the treatment of most abdominal ills and, in cases that have come under my own observation, has been done or advised for the vomiting of pregnancy, disease of the spine and spinal cord, of the kidneys, and even of the middle ear and brain. It was not until 11 years after its introduction that Doyen[5] employed it in the treatment of chronic gastric ulcer. This is recorded in a most instructive paper. He was led to undertake the operation on the supposition that pyloric spasm played a large part in producing symptoms. The first patient was operated on in 1892 for the round type of chronic gastric ulcer, and was quite well at the time of his report three years later; during this interval he had operated on 14 other patients suffering from chronic gastric ulcer without pyloric stenosis. He was rapidly followed by others, and on March 22nd, 1893, it was first employed by Codivilla[6] in the treatment of chronic duodenal ulcer. This was in a male of 40 who was quite well five years later, and it was not until after this, to be exact on May 5th, 1898, that the second case was operated on by this surgeon. Surely an example of surgical patience we should all take to heart. If every operation were tested for a few years before being generally employed many procedures would be justly unknown to any but their inventors.

The first gastro-jejunostomy was anterior with a long loop, the jejunum being sutured to the stomach along a horizontal line with its proximal portion towards the pylorus (retro-peristaltic). In 1885 von Hacker [7] introduced the posterior operation, leaving a loop 20 cm. from the duodeno-jejunal flexure. It was 15 years later that Petersen [8] further improved it by shortening the loop and adopting the iso-peristaltic position of the jejunum introduced by Rockwitz [9] in 1887.

We thus see the international character of surgical work. This operation was conceived in Vienna and its first modifications came from the continent of Europe. Its extension to the treatment of chronic gastric ulcer we owe to the French, to chronic duodenal to the Italians. I do not think, however, we shall be claiming too much for the English-speaking races if we say it was brought to perfection by them, and the names of Moynihan and Mayo will always be associated with this.

It is impossible to give the many variations that have been advised and carried out from time to time, but the next great advance was the advocacy of the vertical position of the anastomosis by Sir Berkeley Moynihan. This was in an important paper entitled "Gastro-enterostomy and After,"[10] which was the first serious estimation of the value of this operation and its after-results. It contains these striking words: "I am an ardent and a sanguine advocate of this operation, than which I think there is none in all surgery more completely satisfactory." When carried out in suitable cases this is an opinion which I to-day still share. It is difficult to understand the very conflicting results reported as obtained after gastro-jejunostomy except on the supposition that they are due to want of appreciation of its indications and of the correct method of carrying it out; if success is to be obtained meticulous care is necessary at each stage. On the one hand, we have a paper written with the title "Gastro-jejunostomy as a Disease"[11]; on the other, we find from the statistics published from the Mayo Clinic[12] that they have a cure rate of 94 per cent. in duodenal ulcer after treatment by gastro-jejunostomy and of at least 85 per cent. after the same operation for the treatment of chronic gastric ulcer. No surgeon who knows the work of this institution, and most of us have been welcomed there, can doubt the accuracy of these figures.

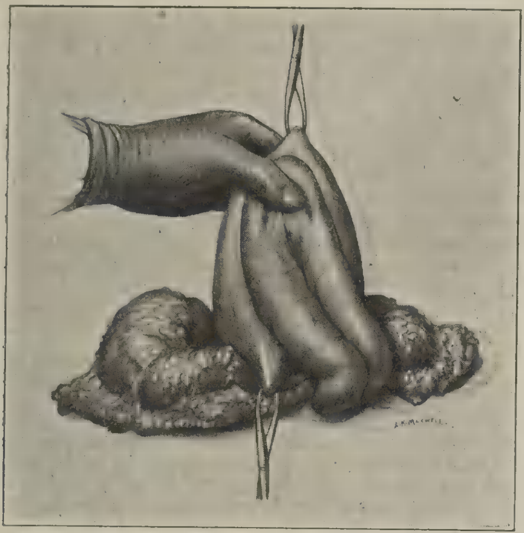
Fig. 2.



To illustrate the first insertion of the through-and-through sutures.

I should first like to describe the operations I carry out at the present time. The one which has given uniform success in my hands is the posterior retrocolic with vertical opening. The jejunum is taken at the duodeno-jejunal flexure and brought to the stomach so as to lie easily without tension on the one hand or looping on the other; the exact part therefore of the jejunum which is anastomosed to the stomach depends on the size and position of that organ. An opening is made in the transverse mesocolon immediately above the flexure, sufficiently large that its edges can be easily sutured to the stomach after the anastomosis has been made without causing deformity to it or the jejunum. The stomach just to the right of the cardiac orifice is clamped vertically from the greater to the lesser curvature (Fig. 1). If the operation is being carried out for a chronic gastric ulcer the anastomosis must be to its cardiac side; making it elsewhere is useless and the cause of many failures. This is even now not recognised universally, and sufficient stress has not been laid on this elementary fact. However the curative results are brought about, good cannot be anticipated when the opening is made to the pyloric side of the ulcer.

FIG. 3.

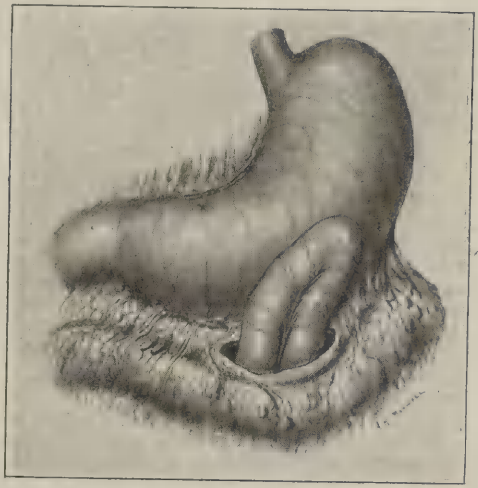


Showing the posterior surface of the stomach exposed and brought out through the gastro-colic omentum, the jejunum being brought to it in front of the colon.

The jejunum is brought to the stomach without a clamp and fixed to it at either end by stay sutures placed so as to secure its opening being exactly at the antimesenteric border and thereby avoid any rotation of the gut on its longitudinal axis. I find this much simpler to accomplish if no clamp is placed on the jejunum. Further, as I have stated before, it is possible that pressure of the clamp may in some instances be one of the causes of jejunal ulceration. No rule can be laid down with regard to the size of the anastomosis; it should extend when possible from the greater to the lesser curvature. This, of course, cannot be done if there is great dilatation; here, while falling short of the lesser, it should reach to the greater curvature. The viscera are then opened and the stitch through all their coats inserted. It is most important to get absolute apposition of mucous membrane so that I do not remove any that is redundant, and pay particular attention to the ends of the incision, uniting these first (Fig. 2). Nowadays the rare cases of gastro-jejunal ulcer are usually found at either end of the anastomosis, I believe due to failure of primary union of mucous membrane here, and it is for this reason that great care is necessary at these points. Before inserting the anterior layer of sutures I loosen the clamp and look for bleeding points. Finally the edges of the opening in the mesocolon are carefully united to the stomach at least half an inch away from the line of anastomosis. Where the mesocolon is very fatty, and the fact that the great omentum is in similar condition makes the posterior operation advisable, I carry this out as the first stage, so as to be certain that the oozing edges shall be well removed from the suture line and so avoid puckering or obstruction from adhesions later. Special care is necessary in dealing with these edges; all oozing should be stopped and the points I have stressed adhered to to avoid the possibility of late post-operative vomiting.

It may, however, be impossible or unwise to perform this retrocolic posterior operation on account of changes in the mesocolon, or adhesions of jejunum to its under surface. If the mesocolon is loaded with fat, or if it is shrunken and adherent to the posterior abdominal wall, operation through an opening in it may lead to severe late regurgitant vomiting. I am also very much averse for the same reason, when a considerable length of the jejunum is united to the under surface of the mesocolon, to separate it, as these adhesions may re-form and cause obstruction. I also think it is unwise to attempt the retrocolic operation if an opening of sufficient size cannot be obtained without dividing one of the vascular arcades. For several years I have carried out an antecolic posterior operation with a short loop in this type of case. The posterior surface of the stomach is exposed by an opening in the gastrocolic omentum, and the jejunum, brought in front of the colon at the splenic flexure, is united vertically to it (Fig. 3). In my hands this has given excellent results. When the posterior surface of the stomach is adherent and partial gastrectomy is unwise or not indicated, I do the anterior no-loop operation that I first performed in 1904 and published in 1907,[13] bringing the jejunum to the anterior surface of the stomach through the transverse mesocolon and gastro-colic omentum (Fig. 4). The opening is finally sutured around the anastomosis in the way I have described in dealing with the normal posterior operation. I have used Lukens' special catgut, No. 0, for suturing gastro-intestinal anastomoses for many years with uniform success.

FIG. 4.



Illustrating anterior no-loop gastro-jejunostomy, the jejunum being brought to the anterior surface of the stomach through the mesocolon and gastro-colic omentum.

I believe that many of the recorded bad results of this operation are due to the way in which it is performed. It is not enough to unite the jejunum to the stomach anywhere, the spot must be chosen as I have indicated, and the opening must be of sufficient size. I should like to illustrate published examples of methods of anastomosis which I do not think are best calculated to bring about the healing of ulcers and reduce gastric acidity. The first[14] is given as an illustration of normal gastro-jejunostomy (Fig. 5); you will see that the opening is horizontal, and that a considerable loop is left. The second is from a paper, unfavourably criticising this operation in the treatment of ulcer of the lesser curvature (Fig. 6). I agree that the type of operation here figured [5] is not the one most likely to lead to cure of the ulcer; it is horizontal and does not reach the greater curvature. To ensure healing the opening should be in the direction shown in Fig. 7.

INDICATIONS FOR GASTRO-JEJUNOSTOMY.

What are the indications for this operation? It is still necessary to state that it should only be carried out for the treatment of a lesion that can be seen, not on account of symptoms, however definite they may appear to be. In the first place, it is the operation that should be performed when surgical treatment has been decided upon in a case of chronic duodenal ulcer. It is rarely that any other procedure is necessary. The operation of gastro-duodenostomy has failed, in my hands, to bring about a satisfactory post-operative reduction of acidity and is more often followed by secondary ulceration. In my opinion duodenectomy has nothing to recommend it.

I should like to give examples comparing the pre- and post-operative fractional meals of patients with chronic duodenal ulcer, recently treated by gastro-jejunostomy and by gastro-duodenostomy. Figs. 8 and 9 are from a male patient operated on by me for chronic duodenal ulcer, after having had symptoms for ten years. With such a result one can certainly say that further trouble is extremely unlikely. Figs. 10 and 11 are from a female patient, operated on after 15 years history. There was a scarred ulcer constricting the first part of the duodenum, which was mobile and dilated. For this reason gastro-duodenostomy was feasible and was carried out with a wide opening. In spite of regurgitation, as shown by the presence of bile and a rapid emptying demonstrated by a barium meal, the chart shows great post-operative acidity. I shall be surprised if this patient does not develop further symptoms.

Gastro-jejunostomy is my operation of choice in chronic gastric ulcer when the ulcer is "free," without suspicion of malignancy, and the anastomosis can be made to its cardiac side. The statements in the paper to which I have just referred [16] are opposed to my experience of the results when the operation is carried out on the lines I have described. The following sentence occurs in it: "I have records of patients who got no benefit from it, and when the abdomen was opened after several years the ulcer still persisted." I also have records of this description, but they apply only to those patients in whom the operation was incorrectly performed, or for whom this treatment was unsuitable.

The following is an example:—

L. C., a male, aged 45, was admitted to the London Hospital under my care in December, 1924. He had had gastro-jejunostomy performed at another hospital nine years previously and had not been relieved in spite of the fact that his test-meal revealed an absence of free HCl and a total acidity of 16. Barium meal showed some delay in emptying, most of the meal being present at the end of an hour. At operation I found a large ulcer "free" on the lesser curvature. The gastro-jejunostomy was small, posterior, and near the pylorus, with no trace of secondary ulceration. After excising it I did my usual operation to the cardiac side of the ulcer. He did well, but died of another cause nearly three months later and I was fortunate in being able to obtain an account of the post-mortem. The gastric ulcer had absolutely healed and the anastomosis was perfect.

This is a very striking instance showing that it is useless to carry out the anastomosis to the pyloric side of the ulcer and illustrates a point I shall deal with later, that the post-operative gastric acidity has no bearing on the healing of the original ulcer. This patient obtained no relief after a gastro-jejunostomy performed to the pyloric side of the ulcer, even though it had brought about achlorhydria, but secured immediate relief and cure of the ulcer when it was done to its cardiac side.

Gastro-jejunostomy should never be advised in acute ulcers with hæmatemesis; it has no influence on this condition. In simple organic stricture of the pylorus, whether due to the cicatrisation of a duodenal ulcer or to any of the more unusual causes, it is the operation of choice. In hour-glass stomach in which the causative ulceration has healed it is of the greatest service, and if pyloric obstruction is present as well may necessitate a double operation. The results of double gastro-jejunostomy are excellent. The first, done 15 years ago, is, and has remained quite well, and all others have been equally satisfactory. That it is not often called for the following figures will show. I have operated on 135 cases of hour-glass stomach due to simple ulceration and in only seven has it been necessary. In the majority a penetrating adherent chronic gastric ulcer was present, indicating the need for partial gastrectomy. It is valuable in carcinoma which is irremovable and causes pyloric obstruction, but not otherwise.

RESULT OF THE OPERATION.

The mode of action and the result of the operation are closely related. The symptoms in chronic gastric and duodenal ulcer are due to spasm or irregular muscular action of the pylorus and pyloric portion of the stomach in duodenal ulcer, and of the body of the stomach in gastric ulcer and to the increased tension produced thereby. Who that has seen the progress of a case after gastro-jejunostomy for ulcer in those perhaps somewhat unusual instances where the pain is so severe as to necessitate the use of opium, and has noted the immediate post-operative relief obtained, will doubt this, and that the relief is due to the mechanical and not to the physiological or, as I prefer to call it, chemical effect of the operation. All who have watched on the screen the marked spasm in chronic gastric ulcer, and in addition their regular peristalsis in chronic duodenal ulcer, will realise that this is a factor which prevents healing. This spasm results in the meal passing at first chiefly by the new opening even in those cases, and they are in the majority, in which no organic stenosis is present. The effect of the operation is to cause more rapid emptying of the stomach and immediately to relieve gastric tension. Its action on the ulcer itself, therefore, is mechanical—that is, it gives the ulcer rest. I have yet to see failure of healing in suitable cases, and I have published many at various times in which I have had an opportunity of examining the stomach and duodenum post mortem or at second operation at long periods after the primary procedure. If healing were due solely to an alteration in the chemistry of the stomach chronic gastric ulcers would heal, even though the anastomosis were placed on their pyloric side and duodenal ulcers would not heal unless there was satisfactory change in gastric acidity. I have had to reoperate on several cases, the primary operation having been carried out by others, one of which I have just quoted, in which in spite of achlorhydria the lesser curvature ulcer was unhealed, the anastomosis being made to its pyloric side, and Ryle,[17] in his Goulstonian lectures, has published an example. It is my experience that chronic duodenal ulcers heal as the result of gastro-jejunostomy, even in those cases in which it does not bring about any profound change in gastric acidity. The operation brings about healing of the ulcer, whether gastric or duodenal, when carried out on correct indications.

On the other hand, from the patient's point of view, the permanent relief of symptoms, it is essential that gastric acidity be markedly diminished even to the abolition of free HCl to prevent fresh ulceration either in the jejunum or at the anastomosis should any infective focus be overlooked, or the mucous membrane fail to heal by first intention. But every patient in whom operation fails to reduce acidity does not develop further symptoms; it is only when

FIG. 5.

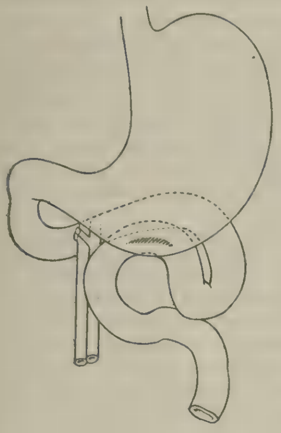


FIG. 6.

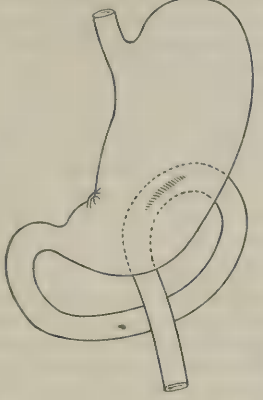


FIG. 7.

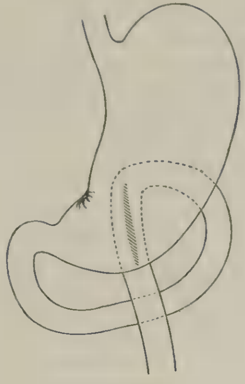


FIG. 12.

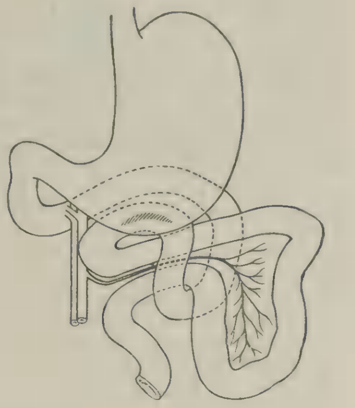


FIG. 8.

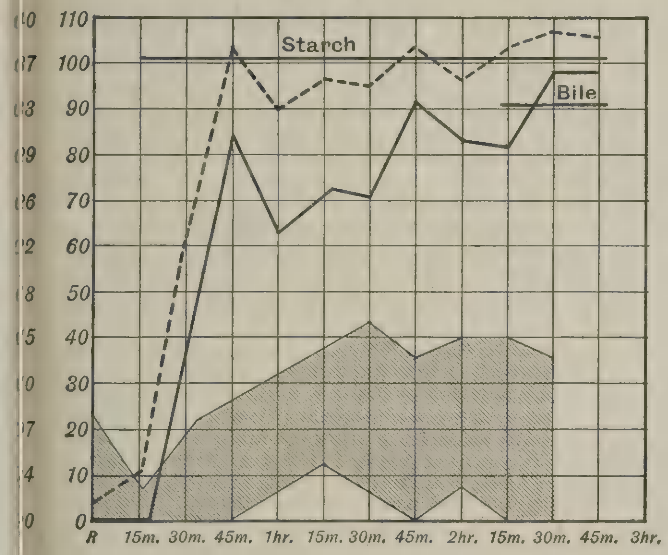


FIG. 9.

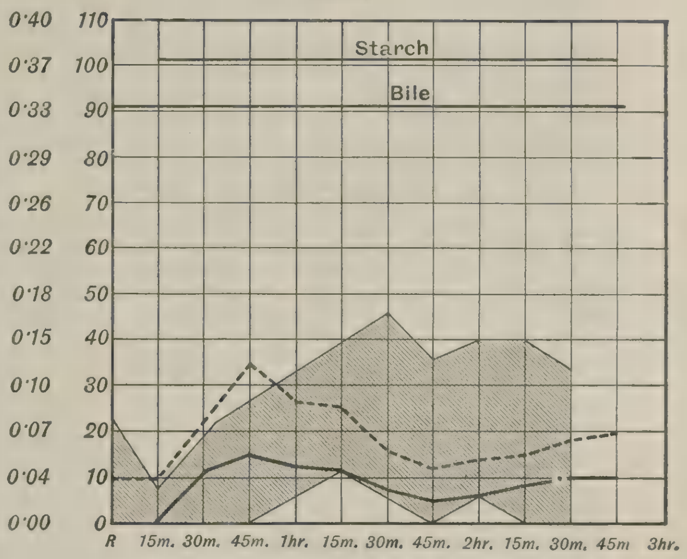


FIG. 10.

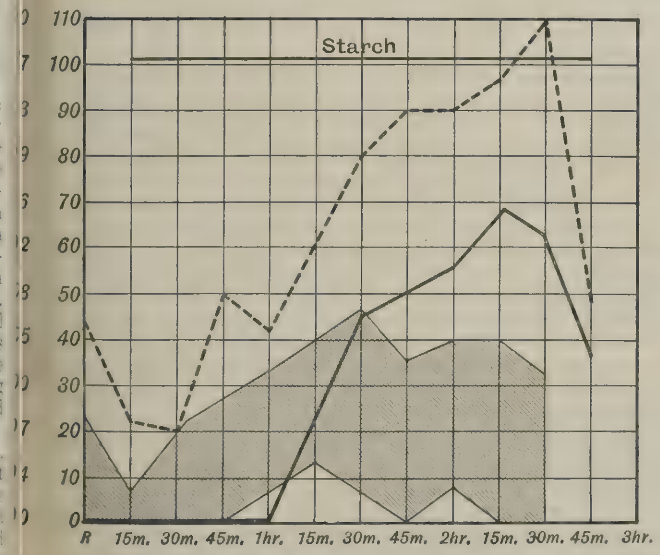
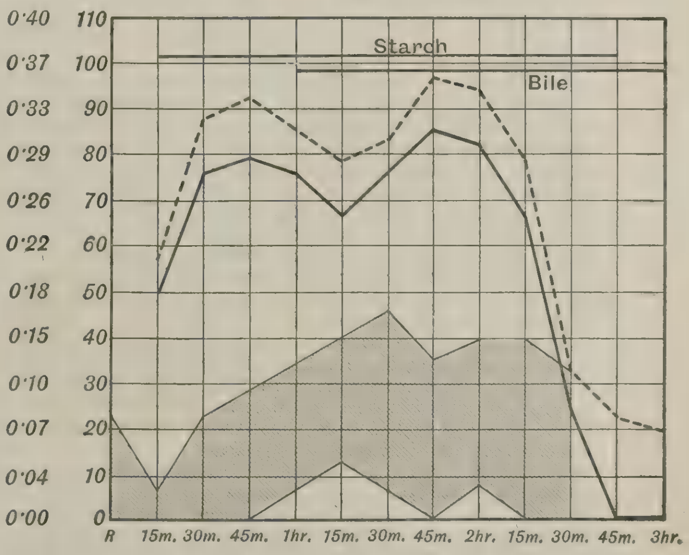


FIG. 11.



In all the charts the continuous line —— indicates free HCl; the broken line . . . . total acidity; the shaded area represents *the limits of free HCl* in 80 per cent. of healthy males (Bennett and Ryle). The figures at the left hand side of the charts indicate N/10 NaOH (per cent. HCl).

some other cause is present such as I have just mentioned.

Failure to reduce gastric acidity has no bearing whatever on the healing of the original ulcer; the operation is "mechanical" so far as this is concerned, "chemical" in its prevention of further disease. I am convinced that post-operative acidity is the predisposing cause of post-operative ulceration and that its great reduction is to a certain extent within our control; a large opening far removed from the pylorus brings about a greater lowering than a similar or smaller one close to the pylorus. I gave my reasons for this belief in my Hunterian lecture.[18] Recently Walton[19] has advocated a similar position for the anastomosis.

What are the causes of the post-operative lowering of acidity which almost invariably takes place after gastro-jejunostomy carried out for the treatment of chronic gastric ulcer, usually to as large a degree as after partial gastrectomy, and fails in some cases of chronic duodenal ulcer? I am certain that reflux of duodenal contents into the stomach is the principal factor. It has been satisfactorily proved that the pancreatic juice is the neutralising agent. In most cases of chronic gastric ulcer the anastomosis must from the necessities of the case be made well to the cardiac end of the stomach. But there is another factor besides that of the position of the stoma. The operation may be carried out on exactly similar lines in two patients of the same age and sex on the same day for the same condition with similar pre-operative meals. In one the post-operative meal reveals an absence of free HCl and a total acidity of 20, in the other one of 0·1 and 50. I shall have much more to say on this subject later, but I am convinced that it is in some way bound up with the use of the pylorus. It is possible that the production of secretin in the duodenum activating the pancreatic secretion may play a part, but I am inclined to the opinion that for the most efficient reduction neutralisation via the pylorus as well as the stoma is required. In support of the view that want of sufficient neutralisation is the cause of post-operative hyperacidity I will quote Bolton's[20] words on the subject:—

> "The essential cause of hyperacidity of the gastric contents is a deficiency in the neutralising process which regulates the acidity of the contents." And again, "The important point to note is that the condition hyperchlorhydria is the result of neuromuscular irritability of the stomach in which the pylorus plays chief part."

In the section dealing with gastric acidity following gastro-enterostomy, he writes as follows:—

> "Following gastro-enterostomy the secretion of gastric juice remains unchanged, any alteration in the acidity curves being due to neutralisation by regurgitation of intestinal contents through the stoma."

H. J. Paterson,[21] who has been an ardent supporter of gastro-jejunostomy and whose writings on the subject are classical, holds the reduction of acidity to be due partly to regurgitation through the stoma and partly to a diminution in the total chlorides secreted, and considers the action of the operation physiological, the result of this reduction of acidity, which he rightly deems necessary for the certain cure of the patient. But the ulcer heals after the operation correctly performed no matter what the gastric acidity, so that from the point of view of healing of the original lesion its action is not physiological.

Although failure to reduce post-operative acidity has no bearing on the healing of the original ulcer, it is of the utmost importance in the future welfare of the patient. I have on several occasions drawn attention to this, the last time in these words when speaking of secondary ulceration:—

> "If the operation permanently abolishes free HCl in the gastric juice, chronic ulceration does not occur. I drew attention to this in my Hunterian lecture, and, for reasons there given, consider it an important cause. I think there is no doubt that a large opening removed from the pylorus produces the greatest lowering of gastric acidity, and interference with the pylorus by exclusion or the presence of adhesions is an important factor in keeping up the post-operative acidity."[22]

I have revised the figures there given up to the end of June, 1925. Out of 195 personal cases of chronic gastric ulcer treated by gastro-jejunostomy in whom pre- and post-operative test-meals were given, in not less than 157 free HCl was abolished and total acidity markedly reduced, in all to below 30. In 26 it was greatly diminished, and in only 12 was it not reduced below normal. Of the duodenal ulcers, similarly brought up to date, 340 in number, in 206 there was absence of free HCl in the post-operative test-meal with a low total acidity, in 79 there was a satisfactory reduction, and in 55 there was little or no reduction. I wish to repeat again what I consider of the utmost importance—no case of secondary ulceration arose among those in whom the post-operative acidity was greatly reduced, and that the patients in whom further symptoms developed were from the group in which there was little or no reduction. It has been my experience that in many of the cases in which there is insufficient lowering of gastric acidity there is interference with the free action of the pylorus, and in these X ray examination shows that the barium meal is leaving chiefly or only by the stoma.

I am convinced that pyloric occlusion at the time of operation is a fertile cause of failure to reduce gastric acidity. Much has been written on this subject which it is difficult to reconcile. Donald Hunter[23] states that it had no effect on post-operative acidity, but on looking at Table VIII. I found these figures: 19 cases without pyloric occlusion, free HCl abolished in 10, remained high in 5, became higher in 4; 21 cases with pyloric occlusion, in only 8 was free HCl abolished, it remained high in 8, and became higher in 5. This is surely evidence that it affects unfavourably the post-operative reduction of gastric acidity. Apperley[24] studied 27 cases by post-operative fractional test-meals and was convinced that pyloric occlusion had no effect on gastric acidity, but that failure in reduction was due to a faulty stoma. I have already mentioned that a failure in satisfactory reduction may be due to the anastomosis being made near the pylorus; a small inefficient stoma will also be a cause, but neither is the sole explanation. In the majority of my own cases there has been no difference in the size or position of the new opening, and in very few did I have to make a note that for some reason the opening had to be smaller than I like and its position unusual. Investigation by X ray after a barium meal in those in whom there was little or no reduction showed that the stomach emptied as rapidly by the stoma as is usual after gastro-jejunostomy. I could discover no difference in this respect between those in whom free HCl was abolished and those with a high post-operative acidity.

Guy[25] examined by the fractional method 26 cases after gastro-jejunostomy. They were distributed as follows: gastric ulcer, 3; pyloric ulcer, 9; duodenal ulcer, 14. He argues that the reduction in gastric acidity is more marked in gastric ulcer because the pre-operative acidity is less and applies the same to pyloric ulcer, a misleading term that I should like to see abolished. Speaking of duodenal ulcer he states:—

> "Since duodenal ulcers are accompanied by such marked hypersecretion, a much smaller reduction in acidity after gastro-enterostomy is to be expected. It has been found invariably that a considerable degree of acidity exists after operation, and a study of the acid curves shows that a reduction to about half of the pre-operative acidity is the maximum that has been obtained. That is, the gastric secretion is now brought within the limits of normal acidity."

This is totally opposed to my experience of the condition. The figures I have quoted entirely disproved this, at least for my own cases. He traverses the view that pyloric exclusion has any bearing on the post-operative result in these words:—

> "The view expressed by Sherren that duodenal exclusion is the cause of post-operative hyperacidity is not borne out, as it has been demonstrated that a high acid level after operation is but the natural result of an excessive pre-operative hypersecretion and is not affected by variations in operative procedure apart from the provision of a stoma,"

but does not give the evidence upon which he bases the statement. Bonar,[26] in a study of gastric function before and after gastro-jejunostomy, also used the fractional method. In 14 cases of chronic gastric ulcer there was an absence of free HCl in 80 per cent., and in the remaining 20 per cent. a marked hypochlorhydria. In 33 cases of duodenal ulcer the fractional meal before operation showed a high acidity in an hour—that is, at the time corresponding with the Ewald meal. After operation he states that marked hyperchlorhydria was still present and that it was marked in three-quarters to one hour—that is, at the corresponding interval to that before operation. This again is not my experience. My results certainly do not bear out his statement that, "In the case of ulcers with high acidities gastro-jejunostomy does not cause to any extent a reduction of the acidity." I have notes of a considerable number of cases examined by the fractional method, though small when compared with those done by the single examination, the results at the hour both before and after operation correspond fairly well with those obtained by the single meal. I am still of the opinion that for diagnostic purposes the single test-meal before and after operation gives all the information necessary; certainly in hospital work it has given me results which correspond more closely to the clinical and operative findings than the fractional. Thus in the case illustrated by Fig. 10, in the fractional meal it will be seen that at the end of an hour there was no free HCl and a total acidity of 43, whereas the Ewald meal that I had given, as this was so unconvincing, showed free HCl 0·23 and total acidity 72, a test-meal corresponding with the condition found at operation. In a long experience of Ewald test-meals in chronic duodenal ulcer I have never had a result of this sort, but have had similar very puzzling discrepancies with the fractional meal. I have abandoned examination by this method except in an endeavour to throw light on exceptionally difficult cases. My medical colleague, Dr. Robert Hutchison, agrees that the "old 'single' or Ewald test-meal is to be preferred to the more modern 'fractional' type."[27] The investigations were all done in the London Hospital clinical laboratory under the supervision of Dr. P. N. Panton, without whose help these conclusions would have been impossible.

Ryle.[28] in his admirable Goulstonian lectures, deals in the third with gastro-jejunostomy and its sequelæ. Speaking of the post-operative reduction of gastric acidity he says that a case with deficient or low motility is more likely to respond to gastro-jejunostomy than one with increased motility; or in terms of the test-meal, a case with a steadily climbing curve is more likely to give a good result than one with a high abrupt peak of acidity and rapid evacuation. In my experience there is certainly no direct connexion between the time of emptying before and after gastro-jejunostomy and the acidity. He quotes me as saying we have yet to learn what is the cause of the failure to reduce post-operative acidity, but did not give my views on the subject that it is due to insufficient use of the pylorus and that for the most effective lowering of acidity it is essential that the pylorus be used as well as the new opening.

The results of the operation when done for chronic duodenal ulcer and picked cases of chronic gastric ulcer have been excellent. Failure to cure the patient occurs, apart from gross mechanical causes of which I shall speak later, or from overlooking lesions of other abdominal organs, only in that group in which there is insufficient reduction of post-operative acidity. Realisation of this is essential and improvement in our results will only come when our work is checked by this knowledge. Devine[29] states that "65–70 per cent. of gastro-jejunostomies for all types of duodenal ulcer were successful. This seems to depend chiefly on the ability of the operation to diminish greatly or abolish acidity." He adds, "Gastro-jejunostomy must therefore remain the basis of average gastric surgery," and considers that it should be, but is not, an ideal procedure. He mentions that the unsuccessful gastro-jejunostomies fell into a group in which there was an increase or little modification of acidity after operation, and that this was due to failure of alkaline regurgitation.

Success with this operation will depend on the care with which it is carried out along the lines I have suggested. Those of us who have obtained good results have been criticised. Pannett,[30] for example, speaking of those who claim 90 per cent. successes, says there is "obviously some radical difference in the manner of evaluation." I should rather say in the exact manner in which the operation is carried out. In a further paper[31] he gives the names of those with cure rates in the region of 90 per cent. Speaking of my own figures I have followed these cases up from the very first and have counted as "quite well" only those patients who have been perfectly well throughout; if they have any digestive complaints they may be included among those improved, but not among the 90 per cent. All patients are seen at 3, 6, and 12 months after operation and heard from yearly till after the third year. I shall give an example later. I have again brought the earlier cases up to date and confirm what I have said before, that the longer the cases are traced the better the result, and most of those who had minor troubles in the first year lost them later and had completely forgotten eight or ten years after that they had occurred. I can speak for the thoroughness of the follow-through method of my colleague Mr. Walton,[32] who has recently described it. The Mayo Clinic needs no defence from me. The results published in the paper from which my figures are taken[33] are better than those of four years previously, owing, I believe, to increased skill in carrying out the operation due to following up all the patients carefully and improving technique; several of the patients then not well are now well. Balfour's[34] figures in chronic duodenal ulcer are an eloquent testimony, 88 per cent. quite well among 1000 patients. Metraux[35] in the study of cases in Roux's clinic found that in 90 per cent. of the cases of chronic gastric or duodenal ulcer treated by gastro-jejunostomy alone a good result was obtained. Peck[36] wrote that simple gastro-jejunostomy properly performed is curative and adequate in the great majority of chronic duodenal ulcers, and that from 80 to 90 per cent. are completely relieved of their symptoms and remain well as they are followed from year to year. We cannot dismiss these figures as due to insufficient care in estimating results as Pannett has done, but rather look to the nature of the operation that others are doing and see if this will not account for their less satisfactory results. If the figures I have quoted from various writers of the failure to reduce gastric acidity after gastro-jejunostomy for duodenal ulcer are an index there is certainly a reason for its failure in many cases.

To sum up, gastro-jejunostomy carried out on modern lines will bring about the healing of all uncomplicated cases of simple chronic gastric and duodenal ulcer. Cases in which the floor of the ulcer is formed by pancreas or liver, or in which there is any suspicion that it is malignant, must be treated by partial gastrectomy. Cure of the patient—that is, complete and permanent abolition of symptoms—will be brought about in at least 90 per cent. of the cases, among the eight or nine not cured seven will be minor complaints, and not more than 2 per cent. secondary ulceration. When such a result can be brought about at a risk of less than 1 per cent. it is obvious that this operation has a permanent place in surgery. I have found no difference in the cure rate of those with organic pyloric obstruction, chronic duodenal ulcer without obstruction, or free lesser curve ulcers. I have obtained equally good results when I have been compelled to use my anterior operation. The first case was in December, 1904, and in this instance I was able to prove that the ulcer was healed at post-mortem 18 months later after accidental death. I have traced a woman operated on in January, 1908, now 74 years of age, without abdominal trouble. A male patient of 39 with a very indurated lesser curve ulcer operated on in July, 1913, remains quite well. I first carried it out in the treatment of chronic duodenal ulcer in a male of 48 on Nov. 11th, 1908. He had an indurated ulcer involving both surfaces of the duodenum; he is now, and has remained throughout the 17 years, quite well.

COMPLICATIONS.

We now come to the principal complications. They may be divided into: (1) Failure to produce healing of the original ulcer or its recurrence; (2) secondary ulceration; (3) intestinal obstruction including regurgitant vomiting; (4) late development of carcinoma.

Failure to Secure Healing or Recurrence.

(1) As I have many times stated I have never found a duodenal or gastric ulcer unhealed at a second operation or post-mortem when an efficient gastro-jejunostomy had been carried out in a suitable case, and my experience now extends to over 100. To prevent anyone thinking this is evading the issue I will state if the ulcer was free and the anastomosis carried out on the lines I have laid down. Where there has been chronic perforation with erosion of the pancreas or liver, a small part of the ulcer sometimes remained unhealed. They are cases in which I recognise that gastro-jejunostomy is not the ideal procedure, but even in many of these it has promoted healing. I was astonished recently on going over my old operation notes to find in how many, in which I had recorded that partial gastrectomy was the ideal operation but could not justifiably be done, the patient had remained absolutely free from all symptoms when traced for as long as 10 to 20 years.

The first case of this nature I operated on in which this note appears was a little over 20 years ago—a man of 33 with a seven years' history, which included two attacks of hæmatemesis. At the operation on Oct. 4th, 1905, I found a large saddle-shaped ulcer of the lesser curvature adherent to the pancreas and carried out posterior gastro-jejunostomy to its cardiac side. I traced him in the way in which I keep in touch with all the patients; I saw him three and six months after operation and heard in 1907, 1908, 1910, 1911, 1913, 1914, 1916, 1919, 1922, and saw him two months ago. He has never had any digestive complaint.

I cannot conceive of a better testimony to the value of the operation.

I have on several occasions found a chronic gastric ulcer unhealed at a second operation in cases in which the gastro-jejunostomy was done to its pyloric side; even if excision is added to this procedure and the gastro-jejunostomy done to the pyloric side of the excision wound, fresh ulceration is usual in the scar. Recurrence of the ulcer or failure in healing may occur in cases in which the gastro-jejunostomy opening has closed or become much contracted as the result of secondary ulceration. In the oft-quoted case recorded by Corner[37] of the fatal perforation of a chronic duodenal ulcer in a patient upon whom Sir Berkeley Moynihan had performed a posterior gastro-jejunostomy three years previously there was contraction of the opening. Corner stated: "There was no jejunal ulcer present; indeed, the gastro-enterostomy opening was very contracted." It is my experience that gastro-jejunostomy openings do not contract to any extent except as the result of marginal ulceration, and as, from the history, the patient had not been really free from symptoms this was undoubtedly the case. I would remark that the original operation was done in the early days in which marginal ulceration due to unsuitable sutures was by no means unusual. I can give a recent example which illustrates the two points, failure of healing or recurrence of the ulcer and closure of the gastro-jejunostomy opening.

A man at the age of 42 was operated on in 1915 by a surgeon, since retired, for a chronic duodenal ulcer with a history of 20 years' standing. Silk was used for the anastomosis. He remained quite well for 12 months and then began to get pain, which differed from that before operation by being in the lower abdomen. The attacks of pain were at first infrequent, but the intervals became shorter and the attacks longer, and when I saw him in February, 1925, he had had severe abdominal pain, which would wake him at night and for two or three years this had been in the upper abdomen. He was a thin man with an obviously dilated stomach. X ray examination showed that it still contained much of the barium meal at the end of seven hours and that little, if any, had passed by the stoma. At operation I found a large anterior duodenal ulcer. The gastro-jejunostomy opening was so small that it certainly measured no more than ¼ inch in diameter. My note says: "I have never seen an opening so contracted, it would have been possible to say that it had completely closed." I carried out posterior gastro-jejunostomy and he lost his symptoms at once.

In speaking of the development of fresh ulceration I have operated for chronic gastric ulcer ten years after gastro-jejunostomy for chronic duodenal ulcer and am able to show the specimen which is now in our museum.

In February, 1913, I operated on a woman of 43, who for 16 years had been having periods of pain after food with one attack of profuse hæmatemesis and melæna a year after the onset of symptoms. Her test-meal was 0·25 and 100. I found a large ulcer on the anterior surface of the first part of duodenum and did a gastro-jejunostomy nearer to the pylorus than I do now, and removed her appendix. Unfortunately no post-operative test-meal was given; at that time I did not have it carried out as a routine. She remained well for two years and then got an attack for which she kept her bed two weeks, a similar one in 1919, and again in 1923. Her barium meal report was: Penetrating ulcer lesser curvature towards cardiac end. Stoma normal. Duodenum functioning normally. Test-meal 0·10 and 35. At operation on June 8th, 1923, I found the duodenal ulcer healed and the gastro-jejunostomy opening perfect. Well to its cardiac side was an ulcer the size of a shilling, which had perforated and was adherent to the pancreas. I did a partial gastrectomy and she remains quite well. On examining the specimen the stoma was as large as the day I made it ten years previously.

In this case the ulcer was either overlooked by me at the first operation or formed later on the cardiac side of the anastomosis. It illustrates once again the uselessness of a stoma to the pyloric side of an ulcer.

Secondary Ulceration.

(2) Secondary ulcers are those which develop in the region of the anastomosis either true jejunal or gastro-jejunal. I still believe, in spite of Walton's[38] experience, that these are separate conditions, although we cannot differentiate them by their symptoms or their causation. Both are due to the action of gastric juice on tissue whose vitality is lowered. This may be from hæmorrhage, infection, or by the failure of union of mucous membrane exposing the underlying tissue. They occur in those cases and those only in which operation fails efficiently to reduce gastric acidity. I should like to repeat again that I have never known the development of secondary ulceration in any patient in whom operation has abolished or very greatly reduced the amount of free HCl in the gastric contents as noted in an Ewald meal. I should again like to emphasise its rarity in women and after operation for gastric ulcer; this I attribute to the infrequency of duodenal ulcer in this sex and after chronic gastric ulcer to the greater proportion of cases in which free acid is abolished and the total acidity is much lowered. In the unusual instances of chronic gastric ulcer with high acidity in which gastro-jejunostomy fails to reduce it there is a liability similar to that in chronic duodenal ulcer. The following is an example and illustrates several important points.

On July 10th, 1917, I operated on a male, aged 40, with the following history. He had five attacks of indigestion, pain late after food, not relieved by it but by occasional vomiting. In his last attack the pain waked him at night. In an attack a year previously he had been in hospital with hæmatemesis; test-meal 0·2 and 78. My own notes are as follows: Gall-bladder normal. Two very indurated ulcers on the lesser curvature, close to the pylorus. There were no outlying nodules and nothing definitely to suggest malignant disease, but had his condition been better I should have done partial gastrectomy. The jejunum was adherent to the under surface of the transverse mesocolon. I made my anastomosis nearer the pylorus than usual and found a considerable loop of adherent gut had been left between it and the duodeno-jejunal flexure. Appendix not removed. His post-operative test-meal—0·12 and 56—was unsatisfactory. I saw him on Sept. 3rd, 1917, and Nov. 4th, 1917, and heard on August 8th, 1918, and Dec. 30th, 1922, that he was in perfect health. He then began to get attacks of pain two hours after food, relieved by vomiting recurring every four to six months. He was admitted to St. Mary's Hospital, and I am indebted to Prof. Pannett for these notes: X ray examination showed delay in the pyloric antrum, but the stoma functioning. Unfortunately no test-meal was given. At operation a gastro-jejunal ulcer was found at the left lower margin of the stoma. The gastric ulcers had completely healed.

This is one of the last cases in which thread was used for the outer layer, and I had to resort to it owing to a shortage of Luken gut. The ulcer was in the usual situation for a gastro-jejunal—that is, at one of the extremities—and I attribute it to working out of the knot of the suture leaving an ulcer which could not heal on account of the high gastric acidity. It is extremely uncommon for symptoms to recur after a lapse of over two years, even after the use of silk or thread for the outer layer of sutures and this is only the second case I have seen. It is an apparent exception to the "rule" that patients free from symptoms for two years do not develop secondary ulceration, but it is obvious that this could not apply to ulcer directly due to unabsorbable suture material in the outer layer as it may take years to work its way out, and if this occurs in a patient with normal or increased gastric acidity the formation of a chronic ulcer is probable.

There are thus, I believe, two factors. One is the failure to reduce gastric acidity. If this remains high then an area of lowered resistance, the result of undiscovered infection in the mouth or abdomen, or of hæmorrhage from puncture of a vessel during suture or bruising from the use of a clamp, may bring about ulceration in the jejunum. If, either from faulty suturing or unabsorbable material being used, the mucous membrane of the anastomosis does not heal by first intention, or, if healed, a suture or its knot works its way out, then gastro-jejunal ulcer may occur. The last true jejunal ulcer upon which I operated was last December. The history is so characteristic of the condition that I must quote it.

In November, 1920, I operated on a male of 45 for duodenal ulcer with a typical history extending over ten years. His barium meal showed the ulcer and his test-meal was 0·23 and 90. At operation: Gall-bladder normal, large ulcer anterior surface first part. Posterior gastro-jejunostomy carried out without difficulty and a fibrotic appendix was removed. His post-operative meal was 0·2 and 81. He remained well for five months only and then began to get pain late after food in the epigastrium and left iliac fossa. I took him in for treatment a year after operation with relief for a time; his test-meal was then 0·13 and 62. The attacks became worse, so that I operated last December; his test-meal was 0·19 and 62. The duodenal ulcer had healed; there was a chronic ulcer in the jejunum immediately distal to the anastomosis adherent to the colon. I excised it, closed the opening in the stomach and jejunum, and carried out pyloroplasty, with the result that his post-operative meal 14 days later was 0 and 33 and the stomach was empty in 25 minutes. He remains well.

The case I quoted last year[39] as an example of jejunal ulcer after gastro-jejunostomy was treated by partial gastrectomy on June 21st, 1921. He remained well for nearly two years and then began to get pain two hours after food. I admitted him again on Dec. 29th, 1923, and found that his gastric acidity was 0·09 and 40. He lost his symptoms while in bed, but ten months later developed diarrhœa and fæcal vomiting, and at operation on Nov. 21st, 1924, I found a jejuno-colic fistula. In this instance I had been unable to restore the lumen of the jejunum so as to carry out the usual partial gastrectomy, as I endeavour to do in cases of this type, and had to do a T-shaped anastomosis of jejunum to jejunum below the gastro-jejunal one, and this accounts for the recurrence.

The condition of secondary ulceration in my own practice is getting rarer with each series of cases. With regard to malignancy supervening on a gastro-jejunal ulcer, I have yet no definite case, but I still consider it a remote possibility.

To sum up, secondary ulcer is the result of failure of the gastro-jejunostomy to lower gastric acidity. But this post-operative excess of acid is not in itself enough, as we see that the ulcer for which the operation was performed heals. There must be some lowering of resistance, either a gap in the mucous membrane from faulty suturing, removal of too much mucous membrane, working out of unabsorbable suture, hæmorrhage, or infection. Their incidence can be lessened even if the condition cannot be completely abolished by careful dealing with all infection and scrupulous attention to all the details of the operation.

There is to my mind no doubt of the necessity for avoiding pyloric exclusion. A case published by Frankau[40] shows its effect experimentally. I am much indebted to him for further notes on the case which enabled me to trace the patient to his original surgeon and obtained fuller details.

In 1914 a man of 29 was operated on for duodenal ulcer. His test-meal was 0·2 and 76, but no post-operative meal was given. Symptoms recurred in nine months, and he was admitted to St. George's Hospital after several severe attacks of hæmatemesis and melæna. His test-meal then was 0·26 and 82. At operation an unusual condition was found, in that there was still a chronic duodenal ulcer present, but there were no signs of ulcer at the anastomosis or in the jejunum. The pylorus was clamped and divided. He remained well for 14 months, and then had abdominal pain, diarrhœa, and vomiting. He was reoperated upon and a jejuno-colic fistula was discovered.

The unfavourable result with pyloric exclusion is borne out by the experience of others. Haberer's[41] figures are instructive; among 265 cases of gastro-jejunostomy there were three cases of jejunal ulcer, but in 71 cases in which pyloric exclusion was added in the treatment of duodenal ulcer no less than 14 developed jejunal ulcers. Kummell[42] had previously pointed out its frequency under these circumstances. Finsterer,[43] who is now an ardent advocate of wide partial gastrectomy in the treatment of duodenal ulcer, writes that Haberer had 25 per cent. secondary ulcers with pyloric exclusion and posterior gastro-jejunostomy. Norman Dott[44] demonstrated experimentally that chronic peptic jejunal ulcer is the constant sequel of gastro-jejunostomy with pyloric exclusion in dogs. Von der Hütter[45] found in his experiments on dogs that jejunal ulcer did not develop in those cases in which the pylorus was patent, but that it was produced when pyloric exclusion by von Eiselsberg's method was carried out. Gussio,[46] from a study of cases of jejunal ulcer, came to the conclusion that its development is favoured by impermeability of the pylorus. Enderlen, Freudenberg, and von Redwitz,[47] as the result of experimental investigations on dogs, came to the conclusion that pyloric exclusion should be abandoned.

As we know that jejunal ulcers only arise in those cases in which there is failure to reduce post-operative acidity it seems to me obvious that interference with the pylorus is one of the causes of this. In 1921[48] I stated that most of my cases of jejunal ulcer occurred in those patients operated on between 1911 and 1913, when I carried out pyloric exclusion, and my observations since then on cases in which from any cause there was interference with the free function of the pylorus confirms this as there was a failure of post-operative reduction.

Ryle[49] states, "There is a greater liability to gastro-jejunal ulcers in young adults and in cases with a short dyspeptic history." As this was not my experience I have put it to the test so far as possible. I took all the cases of secondary ulcer, whether jejunal or anastomotic, that I have operated on, 44 in number; the youngest was 25 at the time of the original operation, the oldest 55, and the average age was 41·7. I then took the same number of consecutive cases of chronic duodenal ulcer, operated on over two years ago; the youngest was 17, the oldest 62, average age 40·4. I then took duration of symptoms before operation in the cases that developed secondary ulcer; the average was ten years, in the consecutive cases the average was 9·5. The number of cases is small, but there is an astonishing correspondence in the two series sufficient, I think, to controvert Ryle's statement. Such varying estimates have been given of the frequency of secondary ulceration that it is difficult to discuss. In a recent paper Lewisohn [50] states that in a series of 68 cases re-examined 4–9 years after gastro-jejunostomy, 34 per cent. suffered from gastro-jejunal ulceration. As in a following paragraph he states, “ Gastro-enterostomy does not reduce the hyperacidity even after many years,” we seem to have the reason for this high percentage. My experience coincides with that of the Mayo Clinic that it is met with in less than 2 per cent. of the cases. Although in large series done in the one clinic the percentage is between 1 and 2 per cent., I still believe that even this can be lowered and should not like to think, as suggested by Walton,[51] “ that the failure of the acid to fall in these gastro-jejunal ulcer cases may be due to an anatomical variation, the acid-producing cells in a certain number of duodenal ulcer cases (about 2 per cent.) being more widely distributed over the gastric surface and thus being less affected by the gastro-enterostomy.” To me this is tantamount to saying we can do no more.

It must be remembered that excision of the ulcer with pyloroplasty or even doudenectomy does not protect the patient from secondary ulceration, and I suspect that its frequency is greater after both these, as pyloroplasty does not usually bring about so great a reduction of gastric acidity, and duodenectomy, like resection of gastric ulcer, will probably be given up on account of recurrence. Mann and Kawamura [52] found that after complete duodenectomy in dogs jejunal ulcer developed in two cases out of ten leading to perforation at 515 days after operation in one, and in the other it was found post mortem 383 days after.

None of the arguments from the secondary ulcer standpoint that have been brought against gastro-jejunostomy seem to me to be valid. It is the most serious drawback, but it is one that we are getting to understand as we realise that what is necessary is not merely a mechanical opening, but control of acidity. In many of the cases of failure to cure the patient other lesions in the abdomen have been overlooked, and I have had to remove the gall-bladder and appendix in these patients on many occasions after the failure of gastro-jejunostomy to cure all their abdominal ills. This should, of course, always be done if practicable at the time of the original operation and as part of the treatment in removing all possible sources of infection.

Intestinal Obstruction and Regurgitant Vomiting.

(3) The bugbear of the early operations, that of regurgitant vomiting, has almost disappeared. It is always due to obstruction. The gross variety which began immediately and continued till death or second operation has disappeared in modern practice. If it occurs now it is from the seventh to the tenth day, the obstruction being the result of the contraction of adhesions, due in most instances, I think, to organisation of blood-clot, causing change in and around the opening in the transverse mesocolon and is always mechanical. It needs one's ingenuity to circumvent the fat or contracted mesocolon and care to control all points of oozing, but I mentioned this in the earlier part of my lecture. But even this is now uncommon, and if it occurs usually yields readily to lavage. The minor cases of occasional bilious vomiting are the result of slight obstruction from rotation of the jejunum.

There are rare and late causes of intestinal obstruction that have been published from time to time, the commonest being that in which the jejunum passes from right to left behind the gastro-jejunostomy, the first published by Barker [53] in 1904 occurred two years after the operation. It is well seen in the drawings of the last case published [54] (Fig. 12) and in another by Bryan.[55] They all seem similar in that practically the whole of the small intestine passes through. It is a complication unlikely to occur after the posterior vertical operation; in both the anastomosis was horizontal. Herniæ through the opening in the transverse mesocolon occurred until this was obliterated by suture. This was recognised as early as 1902 by Moynihan. Retrograde intussusception has been recorded. The late Hamilton Drummond [56] published a case of retrograde intussusception following gastro-jejunostomy and was able to collect and review 13 others. These, however, are all extremely rare conditions and do not detract from the value of the operation.

Late Development of Carcinoma.

(4) We now turn to the possibility of the development of carcinoma in the scar of an ulcer at a time remote from the gastro-jejunostomy. Were this a frequent occurrence it would, of course, be a strong argument for carrying out partial gastrectomy in every case of chronic gastric ulcer. I would say at once that I have never met with this complication following gastro-jejunostomy for a duodenal ulcer, but in one further patient to the one quoted in my Hunterian lecture carcinoma of the stomach developed.

This was a man of 35 upon whom I operated in July, 1916, after a two years' typical history of duodenal ulcer. At operation he had a large ulcer of the anterior surface of the first part of the duodenum. The stomach was normal. He remained well for over three years and served in France. At the end of 1920 he began to lose his appetite and suffered from pain and vomiting. He died in February, 1921, and post-mortem revealed scirrhous carcinoma of the pyloric canal with the thickest and densest part of the carcinoma on the lesser curvature about 2 cm. from pylorus. The duodenal ulcer had healed.

When I reviewed the question in my Hunterian lecture in 1920 I had had three cases in which I had carried out gastro-jejunostomy for chronic gastric ulcer, which died at seven, five, and four years after operation with abdominal malignant disease. All were of the type I now treat by partial gastrectomy. In none was there a post-mortem examination. Since that date no case has occurred, so that I must conclude it is a very rare sequence and one that should not influence us in the treatment of the small free ulcer on the lesser curvature which heals so readily after gastro-jejunostomy.

We must be careful in accepting the presence of a malignant mass in the abdomen after a gastro-jejunostomy as evidence of carcinoma of the stomach or duodenum, or the presence of secondary deposits elsewhere.

I have recently reoperated upon a female patient whose duodenal ulcer I treated by gastro-jejunostomy nearly three years previously. I found carcinoma of the body of the pancreas with secondaries in the liver and spleen. The duodenal ulcer had healed and the anastomosis was perfect. Another unusual case was a male patient of 37, who died of carcinoma of lung one year after gastro-jejunostomy for chronic duodenal ulcer. We were able to obtain a post-mortem and found a thin scar in the duodenum and a perfect gastro-jejunostomy opening. A somewhat similar case was a male of 44, upon whom I carried out partial gastrectomy for a very indurated lesser curve ulcer and a chronic duodenal ulcer. Microscopic examination showed both to be simple. He was readmitted 18 months later with discomfort. He was found to be suffering from carcinoma of his left lung. All three might have been considered as starting in the stomach but for the result of operation in the first, the post-mortem in the second, and the microscopic examination in the third.

I have recently operated upon a case of chronic duodenal ulcer with secondary deposits in the liver from a primary focus in the lung. The case is worth quoting briefly :—

R. M., a male aged 52, was admitted under my care in June, 1925, with a history of almost continuous discomfort after food for nine weeks with vomiting and loss of weight. He was wasted and a definite mass could be felt in the right hypochondrium. His test-meal was 0·28 and 92 and the barium meal showed deformity of duodenal cap. On July 7th I operated, found that the mass I had felt was the liver with a deposit of growth to which the duodenum was adherent. There were several small nodules ; I removed one for examination and then found on separating the duodenum that there was a chronic ulcer with a small perforation. I excised it and carried out posterior gastro-jejunostomy. He lost his symptoms and left hospital four weeks later. Microscopic examination of the duodenal ulcer revealed no evidence of malignancy. The deposit from the liver was carcinoma, and it was suggested that the primary was in the lung. I then had the chest X rayed. The report said, “ Dense shadow in left hilum. Neoplasm almost certainly.”

I have quoted these cases to show that no reliance can be placed on records of carcinoma developing on ulcer after gastro-jejunostomy unless demonstrated at second operation or post-mortem. Moynihan,[57] however, has recorded operating for carcinoma of the stomach 13 years after gastro-jejunostomy for a simple chronic ulcer, the malignant growth being found at its site. This must be a very uncommon occurrence. I can see no reason why carcinoma should develop in a thin scar such as results when a chronic ulcer heals as the result of gastro-jejunostomy, and should look on this solitary case rather as a coincidence. My experience is that carcinoma develops in such a small proportion—certainly less than half of 1 per cent.—of cases treated by gastro-jejunostomy alone that we should not let it influence us, and I am sure I am right in saying that were every case of chronic ulcer to be treated on suspicion as malignant the rise in the immediate death-rate would be far greater than the number of those who might after a lapse of years succumb to carcinoma.

I think it is too often forgotten by physician and patient, and possibly by the surgeon, that gastro-jejunostomy cannot give a new digestive apparatus, but that it can and does, if properly carried out, lead to the healing of the ulcer, prevents its recurrence, and in only a small percentage of cases is it followed by secondary ulceration. But these patients may suffer as other dyspeptics without organic lesions from discomfort after food, and considering this, 90 per cent. of cures without any digestive disturbances is remarkable.

In conclusion, I should like to say as my mature opinion that gastro-jejunostomy is still the most satisfactory treatment for duodenal ulcer and all cases of free gastric ulcer, that its results equal, if they do not excel, those of any other major surgical operation.

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EXPERIMENTAL AND CLINICAL INVESTIGATION OF MERCUROCHROME.

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THE following account of an investigation of mercurochrome may be of some interest. The preparation is an antiseptic acting powerfully in weak dilution even in the presence of albumins; it penetrates deeply and, although it contains 24 per cent. of mercury, it is feebly toxic. By several local surgeons, particularly Mr. F. Walters, this substance was found to give excellent results in some cases, but in others, apparently identical, its action was disappointing. It was this variability which suggested the investigation. Mercurochrome is stated to be disodium-dibrom-oxy-mercury-fluorescein. It is freely soluble in water, but in distilled water, which has a faint acidity, it is rapidly broken down, especially when exposed to light. In normal saline which is feebly alkaline it is much more stable and appears to keep indefinitely in the dark. A solution in this solvent six months old was recently tested and no alteration was noted. Four samples have been examined, one from the stock of the Bristol Royal Infirmary, and three others obtained by Mr. A. Taylor, the dispenser. For brevity it may be said that no differences in toxicity or antiseptic activity could be determined.

Action of Mercurochrome on Organisms under Varying Conditions.

Its antiseptic power was determined in the following way. Carefully measured amounts, by pipette, of a 1 per cent. solution in normal saline were added to 50 c.cm. of a standard broth; after mixing 5 c.cm. were measured into sterile tubes, giving ten tubes of a constant dilution. To these tubes were added varying amounts of acid, alkali, emulsion of micro-organism, and normal saline. These additions were made with standard Dreyer pipettes. The series was incubated overnight and notes made of increased turbidity, indicating growth in the conditions present, the next day; then subculture of a fixed amount was made to determine survival.

The action of four different samples in solutions aged up to four weeks, dilutions from 1 in 1000 to 1 in 500,000, was tested against nine strains of *B. coli*, one of *S. aureus*, one *B. pyocyaneus*, and three streptococci. The following acids were tested: phosphoric, sulphuric, hydrochloric, nitric, formic, acetic, and lactic; as, however, no appreciable differences were found between them they require no further discussion. On the alkaline side sodium hydroxide was used.

As the full tabulation of these tests would require considerable space, verbal condensation must be substituted.

Effect on S. aureus.—Dilution 1 in 50,000: growth occurred in acidities from neutrality to pH 6·8–6·5. Survival occurred in this dilution to acidity pH 6·0. Dilution 1 in 100,000: growth to pH 6·0; survival to pH 5·0. Dilution 1 in 200,000: growth to pH 5·6; survival to pH 4·7.

It is seen from the above that the actual acidity of the solution is of more importance than the concentration of the antiseptic. At acidities near to the neutral point the antiseptic is so little powerful that the organism can grow in its presence; a relatively slight acidity first inhibits growth and another slight increase causes death.

Effect on B. coli.—Great variability was found. The most resistant strain tested behaved as follows. In a dilution of 1 in 10,000 growth occurred at pH between 7·9 to 5·6. Survival occurred between pH 8·7 to 4·8. The variability of the nine strains is shown by the different acidities at which survival occurred; the dilution was 1 in 30,000. Three strains survived in acidities down to pH 6·8; two strains to pH 6·6; two strains to pH 6·0; one strain to pH 4·6; one strain did not survive at neutrality. One of the strains tested was obtained from a patient who had been treated with mercurochrome for some time; this strain was one of the least resistant found; habituation had not reduced toxicity.

Effect on B. pyocyaneus.—At dilution of 1 in 10,000 no survival was found. At 1 in 20,000 survival was found to pH 6·8. At 1 in 30,000 survival to pH 6·5. At 1 in 50,000 survival to pH 6·0.

Effect on S. equinus.—Dilution 1 in 30,000, survival to pH 6·7; dilution 1 in 50,000, survival to pH 6·0; dilution 1 in 100,000, survival to pH 5·2.

Effect on S. ignavus.—Dilution 1 in 30,000, survival to pH 6·8; dilution 1 in 50,000, survival to pH 6·5; dilution 1 in 100,000, survival to pH 6·0.

Another factor which probably leads to variability in the results obtained with this antiseptic was found when experiments were made to determine whether an increase of the infection would lead to alterations in the results. The amount of infection used in all the above experiments was three drops of an emulsion of a standard opacity. Series of tubes containing equal amounts of a constant dilution of mercurochrome at the same acidity were prepared. To these increasing amounts of the emulsion of living organisms were added and the dilution was kept constant by the addition of saline. The result was of interest; in a dilution of 1 in 2000 there was no survival until nine drops of emulsion had been added; if more than nine drops were added survival constantly occurred. In a dilution of 1 in 2500 at the same acidity and using the same emulsion, it was found that only six drops were needed to ensure survival.

The explanation of this diminution of the antiseptic power of mercurochrome in the presence of a more massive infection is not quite clear. It is known that in a given strain of an organism there are units of different vitality, some weakly, others vigorous; by increasing the number of units the chance of there being one of these vigorous ones would be more likely. If this were the explanation the results would not be so constant, every now and then a vigorous unit would be found in the lesser dilutions. The explanation appears to be the protective action of the increased density, caused by increased amount of bacterial protein added. It was found that with a constant dilution of the antiseptic and a constant acidity the antiseptic action of this substance diminished with increased density of the solvent, especially when the increase of density was due to protein.[1] Thus the solution in distilled water was more toxic than that in normal saline, and that in normal saline greater than that in the standard broth. In normal saline mercurochrome, 1 in 10,000 at pH 6·4, a strain of *B. coli* survived for one hour only; in the standard broth the same strain survived overnight.

Comparison of Mercurochrome and Corrosive Sublimate.

The antiseptic properties of $HgCl_2$ were tested in the same way, and it was found that increasing acidity augmented its power. Weight for weight it was found that $HgCl_2$ was more powerful; thus, in a dilution of 1 in 100,000 in nutrient broth, killing power was increased as the acidity increased, but in this dilution and medium mercurochrome was devoid of killing power on *B. coli.* If a comparison be made relative to the mercury-content, however, it is seen that mercurochrome is the more powerful; in mercury-content 1 in 100,000 $HgCl_2$ corresponds to 1 in 32,000 mercurochrome, which dilution has been shown to be strongly antiseptic at relatively low acidities. Mercurochrome has the advantage that it is not precipitated by albumins, and it will be shown that it is considerably less toxic.

Penetrating Power of Mercurochrome.

The rapidity of penetration of mercurochrome has already been proved.[2] The following experiment emphasises the depth of penetration.

A rabbit of about 2 kilos was anæsthetised with ether and after emptying the bladder a 0·5 solution of mercurochrome was injected under the feeblest pressure possible. The catheter was then clipped and the bladder kept full for one hour, after which the animal was allowed to recover from the anæsthetic. Next day it was killed with chloroform. It was found that the bladder was deeply stained throughout, that the peritoneum round the bladder was deeply stained, and a less deep staining tracked upwards along the attachment of the mesentery. The pelves of the kidneys were distinctly stained, although the pressure of the injection had been far too low to force the ureteric valve.

This explains the finding that intra-ureteric injection is not necessary in pyelitis.

Toxicity for Animals.

The toxicity for animals was found to be less than had been reported; 10 mg. per kilo has been given as a lethal dose.[3] Either the difference is due to the solvent used—i.e., normal saline, with better keeping power—or the rabbits in this country are more tolerant. Altogether 24 rabbits were used, and about 130 injections intravenously or intraperitoneally were made. Old and new solutions of the four samples were used, and no differences could be determined between fresh solutions and those up to three weeks old.

In 1 to 2 per cent. solution there appeared to be no signs of toxicity below a dosage of 5 mg. per kilo. When this amount was exceeded diarrhœa appeared and increased with the dose. At 25 mg. per kilo deaths began; at 35 mg. per kilo rather more than 50 per cent. of the animals died, and the survivors were very ill; 50 mg. per kilo was fatal in about one minute. Excretion appears to be mainly through the colon and the kidneys, and is slow; a rabbit which received 7 mg. per kilo daily for four days was very ill, but recovered. Two female rabbits received 175 and 180 mg. each, spread over ten weeks; they both recovered and between them produced four normal litters, one during the course of the injections.

When death occurs rapidly after a large dose it appears to be due to heart failure; the heart is found to be dilated and is in diastole. In the animals dying after several doses the main changes found were a catarrhal colitis and a varying degree of nephritis. The latter did not appear to be proportional to the amount of mercurochrome injected. The nephritis was mainly tubular and desquamative; but in deaths after large doses, hæmorrhages into the glomeruli and interstitial tissue were found. Pronounced fatty degeneration and calcification, the special features of mercurial nephritis, were not noted.

Mercurochrome as a General Antiseptic.

An attempt was made to determine whether mercurochrome had any value as a general antiseptic. From the in vitro experiments recorded above it appeared unlikely that such would be found. At the acidity of the blood its antiseptic activity was found to be so slight that at the concentrations possible in the living animals such an action appeared to be improbable. Rabbits were inoculated intravenously with virulent strains of *B. aertrycke* and *B. coli*; half were kept as controls, the other half received sublethal doses of mercurochrome intravenously at varying intervals after the inoculation. The result was always the same, the animals which received the mercurochrome died before the controls.

Mercurochrome has frequently been injected intravenously in man, mostly for pyelitis, in which the results are fair. In pyelitis it cannot be termed a general antiseptic ; here it is concentrated in the urine during excretion and, if the concentration and the acidity are adequate, a well-marked local antiseptic action will occur.

Therapeutic Uses of Mercurochrome.

Mercurochrome has been used in many ways and in various conditions ; there is a fairly large literature, mainly in the American medical press. It is hoped that the findings noted above will give improved results. Whatever condition requires its application it is advised that purulent discharges be removed by lavage and that the solution be rendered feebly acid, preferably by means of acetic acid ; the latter should be added drop by drop until the first degree of turbidity appears ; this reduces the pH to about 6·2.

Its chief use appears to be in infections of the urinary tract ; here it is considerably superior to the usual methods of treatment. Subjective symptoms disappear rapidly, but laboratory cure is more slow. The relief which frequently follows a single injection is striking. The method which I have adopted is the following :—

The bladder is emptied, preferably by catheter, and if there is much pus a preliminary wash with normal saline is given. Then 1 to 2 oz. of mercurochrome is introduced and retained for about one hour, after this time it is voided. An injection is given once or twice weekly, depending on the severity of the case. Occasionally some suprapubic pain is noted ; in such a case the mercurochrome can be removed at once, and subsequent injections should be given more diluted. After two weeks to a month the injections may be replaced by sufficient alkali by the mouth to render the urine alkaline. During the time the mercurochrome is being used the urine is kept as strongly acid as possible by means of sodium acid phosphate.

Even in pyelitis the same method is employed ; intra-ureteric injection is not necessary. I have been using this method for out-patients, as well as for cases requiring bed.

In four cases of ulcerative colitis lavage with 6 to 8 oz. of a 0·3 per cent. solution gave good results in three ; the fourth case appeared to have perforated before his admission to hospital. In one of these cases there was much irritability, and a solution in mucilage of tragacanth was more easily retained. As a superficial application it has been instilled or used as a wet dressing and covered with jaconet ; it is very soothing and its penetrating property produces good results. Its injection around septic processes has given some brilliant results ; an account is being prepared.[4] I have only used it in this manner around deep whitlows after incision ; pain was eased and healing appeared to take place more rapidly than in cases not so treated. It may be found of use in pleural empyema and suppurative peritonitis ; in one case of pneumococcal peritonitis I advised its injection, but the patient died. When injected the total amount must not exceed 5 mg. per kilo.

Summary.

1. Mercurochrome is a powerful antiseptic of low toxicity, rapid and deep penetrability, and causes little irritation. It does not precipitate albumins. If protected from light it is stable for long periods in normal saline solution.
2. Its antiseptic properties are augmented by acidity ; they are diminished by increased density of solvent and are likely to be less apparent in heavy infections. Various strains of an organism show differences in susceptibility.
3. At acidities near to normality its antiseptic properties are relatively feeble and it is unlikely to be of value in general infections.

I am indebted to Prof. I. Walker Hall for much advice and laboratory facilities. The expenses of this research have been met by a grant from the Colston Research Fund.

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NOVASUROL : A NEW DIURETIC.

By A. R. GILCHRIST, M.B., Ch.B. Edin.

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CERTAIN advanced forms of cardiac failure frequently prove refractory to all therapeutic measures, and this is notably the case when digitalis, dieting, and the common diuretics have no effect in removing the œdema. Therefore, any drug which could be relied upon to invoke a profuse diuresis, relieving the overburdened ventricle, would be assured of a permanent place in therapeutics.

Novasurol was originally introduced by the Bayer Company as an organic compound of mercury for the treatment of syphilis, its composition being sodium - oxymercuric - ortho - chlorphenol oxylacetate with dimethyl malonylurea. Later its diuretic properties were noted by Saxl and Heilig.[1] The drug is put up in sterile ampoules and is administered in doses of 1–2 c.cm. by intramuscular or intravenous injection, each c.cm. containing 0·1 g. of the drug. As a test of its capabilities we have employed the drug in several cases of advanced cardiac failure where the response to digitalis, the diuretics in common use, and the usual therapeutic measures was unsatisfactory—in fact, where the patient's clinical state was virtually at a standstill. As a means of comparing its effects the drug has also been administered to certain other cases. Records of ventricular rate, 24 hours' volume of urine, weight, and vital capacity (V.C.) have been kept throughout treatment—the fluid intake was kept approximately constant. The dose employed was generally 1 c.cm. injected into some œdema-free area, either the buttock or back. Subcutaneous injection must be avoided, as the drug acts as an intense local irritant.

Clinical Records.

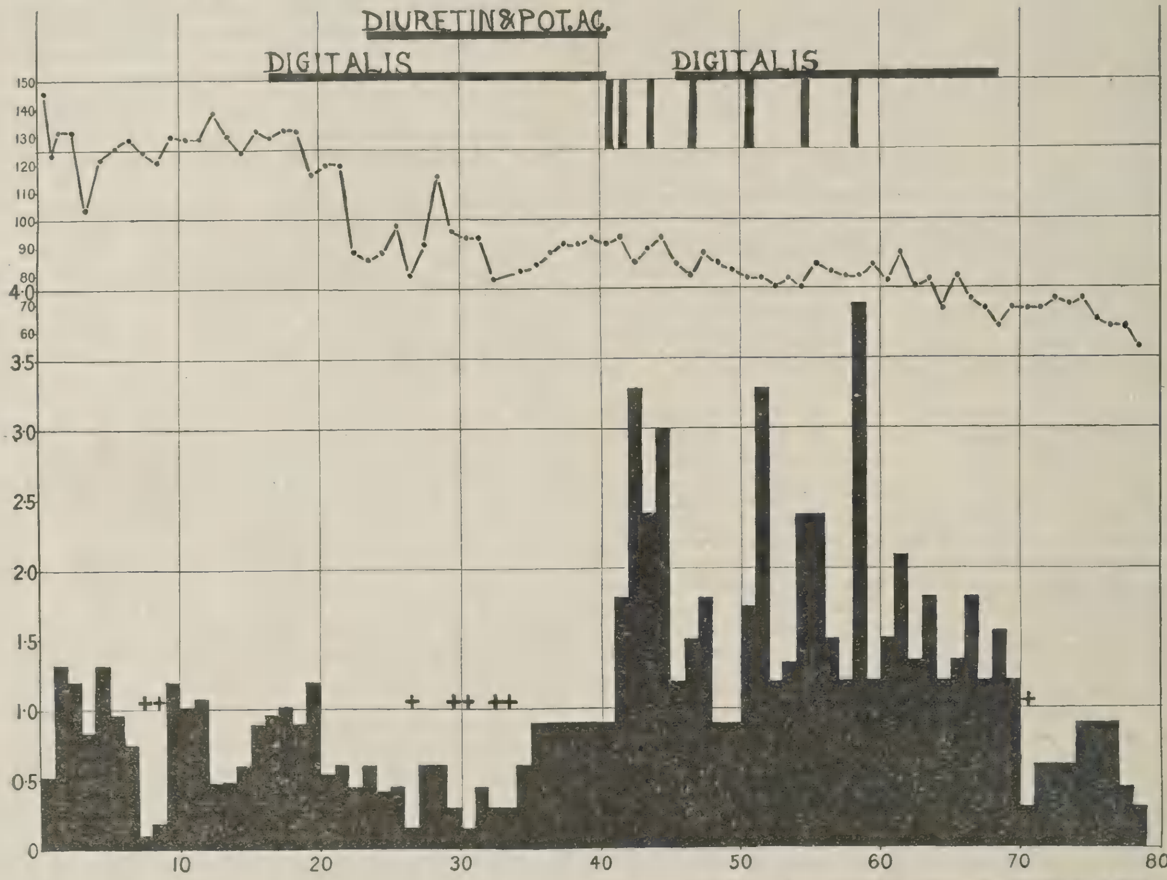
A few clinical examples of its use and effects may be recorded :—

CASE 1.—Mrs. J. A., aged 43, was an in-patient from Feb. 15th to April 23rd, 1924. She was admitted in an advanced stage of failure, which responded well to digitalis and the usual measures. The diagnosis was mitral stenosis with auricular fibrillation. Quinidine restored the normal rhythm which persisted until she was readmitted on May 21st, 1925, with failure more advanced than before, and accompanied by a secondary anæmia. Digitalis slowed the heart without benefit to her general condition, the œdema increased, and the urine output fell to 900 c.cm. Diuretin and pot. acetate were employed without effect. Novasurol was then tried with excellent results. It was necessary to employ the drug on seven occasions, and on the days following its use her urine amounted to 1800, 3300, 3000, 1800, 3300, 2400, and 3900 c.cm. She lost 17¼ lb. in weight. This was accompanied by marked clinical improvement, and she was discharged in good health on August 8th, 1925. This case is shown graphically (see figure).

CASE 2.—J. P., aged 25, suffered from mitral and aortic regurgitation with auricular fibrillation. There was much ascites present, ventricular rate 120, V.C. 55 per cent., and urinary output measured 1000 c.cm. Digitalis produced some improvement (V.C. = 75 per cent.), but a certain amount of ascites persisted. He now received four injections of novasurol at intervals after massive doses of digitalis. His urine measured 2280, 3300, 4080, and 1200 c.cm. The V.C. now rose to 97 per cent. Having lost 17 lb. in weight, he was discharged on April 9th, 1925. He was readmitted with similar symptoms on the 28th, and novasurol was repeated without previous digitalisation, Urine output increased from 750 c.cm. to 2400 and 3300 following two doses, and the heart rate fell from 120 to 66 in 24 hours. The œdema and ascites disappeared. Digitalis was now employed and his condition improved steadily. On discharge his V.C. was 89·4 per cent., weight lost = 14¼ lb., and heart rate = 80.

CASE 3.—A. S., aged 29, suffering from advanced failure due to mitral and aortic disease with auricular fibrillation. Digitalis and diuretin were employed with some benefit, but the œdema and ascites persisted. Novasurol was now employed. The first three doses had little effect, but the fourth, given when fully digitalised, raised his urine output from 960 to 4050 c.cm. on the following day. Steady improvement now set in, his V.C. rising from 32·5 per cent. to 65·5. He lost 54 lb. in weight and was discharged on April 26th, 1925. He was readmitted on July 31st with similar symptoms. The same lines of treatment were carried out, and novasurol provoked diuresis of 2300, 2880, 2320, 1800, 2280, and 2760 c.cm., whereas digitalis alone was relatively ineffective. He was discharged on Oct. 14th, having lost 41 lb. in weight, and with a V.C. of 61·4 per cent.

Case 4.—Mrs. E. N., aged 50, was a patient from Jan. 9th, 1925, until her death on April 24th. She suffered from advanced cardiac failure, secondary to chronic bronchitis and emphysema of 10 years' duration. There was great œdema extending from the feet to the back, and much ascites. Her urine averaged 600 c.cm. for the first ten days in bed. Heart was regular (V.C. = 28·4 per cent.). Digitalis, diuretin, urea, repeated doses of calomel, theocin, and caffeine were all tried without benefit. Novasurol had little or no effect.



Case 1.—Showing urine output in litres per 24 hours (larger figures at left) and ventricular rate per minute (smaller figures at left). The + sign indicates that a portion of the 24 hours' sample of urine was lost on that day. The time during which digitalis, diuretin, and potassium acetate were administered is indicated by the horizontal lines; each injection of novasurol (1·0 c.cm.) is represented by a vertical line. The lower figures indicate days in the ward.

Case 5.—Mrs. M. A., aged 52, gave a history of five attacks of rheumatic fever. The heart rate was 150, regular, and a diagnosis of mitral and tricuspid incompetence was made. There was ascites, and generalised œdema was present, which reached enormous proportions in the legs. Urine output average = 600–900 c.cm., and V.C. was 28 per cent. A massive dose of digitalis slowed the heart, but did not relieve her condition, and urine remained as before. Novasurol induced a diuresis of 2160 c.cm., but improvement was not maintained, and further repeated injections with and without simultaneous administration of digitalis were ineffective. Diuretin, theocin, repeated doses of calomel, Guy's pill, &c., were without avail, and she died on July 14th, 1925.

Commentary.

Of the five cases now reported two failed to respond satisfactorily to the drug. In one, Case 4, diuresis was not produced, and in the other, Case 5, although temporary improvement set in after its use, this was not maintained. Those that responded suffered from auricular fibrillation. In Case 4 the myocardial failure was secondary to long-standing pulmonary trouble, and it is unlikely that any drug could overcome the mechanical causes of the cardiac failure here present. Drugs can only alleviate cardiac failure in so far as the myocardium is able to avail itself of the help offered. In Case 5 the failure to respond to the preliminary diuresis induced by novasurol must be attributed to the fact that the heart muscle was so damaged that its activity bore no relationship to the bodily needs. In both these cases the ventricle was completely exhausted. Further experience will teach how to select those cases which will be able to benefit by the use of the drug, but it is noteworthy that in both unsuccessful cases the vital capacity was reduced to less than 30 per cent. (calculated on West's standards).[2] Peabody's researches[3] have shown the value of vital capacity in following the course of cardiac disease and as a guide to treatment. Both cases also suffered from intense venous engorgement, and in Case 5 the venous blood pressure (Young's method[4]) reached 28 cm. of blood, the normal value being about 10–14 cm. by this method. In Case 1 the results were dramatic; here digitalis and diuretin were of no value, and improvement set in as soon as diuresis lessened the ventricular burden. Cases 2 and 3 also demonstrate conclusively the drug's value, and, as would be expected, the diuresis produced is greater when the patient is fully digitalised. It bears a resemblance to Guy's pill in this respect. The urine output also depends upon the amount of tissue fluids present on which the drug may act.

Novasurol, therefore, appears to be a most suitable adjuvant to digitalis therapy, and is apparently more reliable and more potent than any other diuretic at present in use. Pisani[5] has recorded five cases in which the drug was effective when other remedies, such as theocin, digitalis, and strophanthin, had failed. Oerting[6] had five successful cases out of a total of ten, and in Crawford and McIntosh's series[7] two of eight cases were unsuccessful. Most authorities agree that owing to the presence of mercury in the drug renal disease is a contra-indication to its use. Keith, Barrier, and Whelan[8] have, however, recently reported 12 cases of nephritis successfully treated with ammonium chloride and novasurol. This appears to open up an increased field of usefulness for the drug.

Conclusions.

1. Novasurol is a diuretic of great value in cardiac failure. It appears to be of greater potency and certainty than any of the other diuretics in common use.
2. When employed with digitalis each enhances the other's action.
3. It is suggested that cases which do not respond to the drug have a very low vital capacity, and it is unlikely that any diuretin would be helpful to such hearts.

My thanks are due to Prof. Murray Lyon for placing these cases at my disposal, and for his helpful criticism and advice in connexion with this work.

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Medical Societies.

ROYAL SOCIETY OF MEDICINE.

SECTION OF SURGERY.

A MEETING of this Section was held on Nov. 4th, Sir LENTHAL CHEATLE, the President, in the chair.

Dr. J. H. SEQUEIRA opened a discussion on

PRE-CANCEROUS STATES.

He said that the skin aspects of these states deserved more attention than had hitherto been given to them. A pre-cancerous state was hard to define; there were all degrees of susceptibility. Some skin conditions very frequently became cancerous, others but occasionally. The time factor might be the determining one. At any rate, it could be said that there were certain conditions which were potential cancers. For convenience he divided these into congenital and acquired. All conditions of hyperkeratosis, pigmentation, and warty formation were peculiarly liable to malignant change. He illustrated his points by a series of photographs. Xeroderma pigmentosa was a congenital anomaly running in families, a kind of juvenile senility of the skin wherein young children showed all the changes associated with prolonged exposure and might even have definite carcinomata. Occasionally the same condition was seen in the adult. Unna had described a "seaman's skin-cancer" which was the result of any exposure, on sea or on land. The new growths, whether squamous-celled (epithelioma) or basal-celled (rodent ulcer), rarely developed wide malignancy unless they were in the region of the angle of the mouth. To be compared with these conditions was the well-known X ray cancer appearing on the very thin, atrophic, vulnerable, pigmented, and warty skin resulting from repeated short applications or, rarely, from one bad burn. Since the introduction of X ray treatment for lupus the percentage of carcinomata appearing on old lupus sites (formerly 2 per cent.) had greatly increased. Tar and creosote cancers were similar conditions which followed the burning off of the small warts that the workers developed in handling the irritants. The arsenical treatment of psoriasis exposed patients to small doses of the drug over many years and the skin took on an appearance very like congenital keratosis, with a characteristic "raindrop" appearance of the pigmentation. Other forms of chronic irritation that he had found resulting in cancer were the prolonged wearing of a cheap wedding ring and the constant use of a hot poker by a baker. He showed photographs of a case of multiple rodent ulcers on the forearm. The patches had been diagnosed as psoriasis, but histologically they showed a transitional condition of pre-cancerous dermatosis, some of the cells being squamous and some basal. He asked whether surgeons now attached any importance to "dyskeratosis."

The PRESIDENT divided his cases into two classes: the desquamative hyperplasia, which was desquamative only; and the dysgenetic epithelial hyperplasia, which led to tumour formation. Normal epithelial overgrowth, as in the covering of a wound, might be called "genetic epithelial hyperplasia." By "carcinoma" he understood a dysgenetic epithelial hyperplasia associated with invasion of surrounding connective tissue and metastasis. Clearly, such a condition must at first be limited to normal boundaries, and therefore there must be such a thing as a "pre-cancerous state." His definition did not admit the presence of carcinoma unless there were invasion and metastasis; to this there were, of course, a few exceptions, such as rodent ulcer, and there could no doubt be a condition of malignancy or potential malignancy without metastasis. The changes occurring in the breast were, in sequence, a dysgenetic epithelial hyperplasia (sometimes called "chronic mastitis") with a lymphocytosis beneath the skin, warts, papillomata, and then a tremendous hyperplasia of very malignant-looking cells. All these changes were within the limits of the normal, but transplantation of these cells under the skin of another part of the same animal resulted in their growth and malignant metastasis, but transplantation of tar-warts only resulted in atrophy of the transplant or the formation of non-malignant cysts. He thought that these warts were not in themselves malignant, but certainly a source of danger. The lining of the papillomata, however, could certainly become malignant. It was impossible to say in any given case whether or not malignancy was likely to supervene.

Mr. W. SAMPSON HANDLEY said that the essential factor in the pre-cancerous condition was the connective tissue change. Epithelium could not nourish itself properly from the body-fluids; it depended on the connective tissues for nutrition; it might be described as an obligate parasite on connective tissue. It could not grow by itself, but would grow if connective tissue were added to it. Carcinoma began with long-standing inflammatory changes in connective tissue; 20 or 30 years might elapse between the lupus, or the tar irritation and the cancer resulting, which was preceded by a collection of lymphocytes and plasma cells beneath the epithelium. He showed photographs illustrating the permeation of lymphatics and proliferation of the epithelium; a lymphangitis was always present in cancer, lupus, and syphilis. If the ducts were blocked there would be auto-intoxication; possibly this might bear some relation to the "third factor" of Dr. W. E. Gye. In the diagnosis of early breast cancer a valuable sign was deviation of the nipple. If there was deviation in a supposed case of chronic mastitis it should arouse the gravest suspicion.

Mr. ZACHARY COPE regarded pre-cancerous states as essentially a medical condition. He reviewed the examples encountered in the alimentary tract. In the mouth there were three conditions: (1) Leucoplakia; this should be removed if it did not disappear under medical treatment. (2) Papilloma of the tongue, which should always be excised. (3) Dental ulcer; this was always a potential cancer, and should be treated as such if it did not subside rapidly under medical treatment. No pre-cancerous condition could be distinguished in the œsophagus. In the stomach the relationship of gastric carcinoma to gastric ulcer had received much attention with very varying results. Figures had ranged from 75 to 5 per cent., and now there seemed little evidence that a simple ulcer ever ended in carcinoma. Valuable statistics could be obtained if surgeons would investigate the after-histories of perforated ulcers on which they had operated. In the small intestine carcinomata were rare; the papillomata were to be regarded as pre-cancerous, as they were also in the urinary tract. In the large bowel multiple papillomata were certainly pre-cancerous, but there seemed no connexion between cancer and such forms of ulceration as typhoid, except that any form of toxæmia might predispose.

Dr. E. Shaw had no doubt of the existence of a pre-cancerous state. The two main conditions to be considered under the term were chronic inflammations and simple new growths. In chronic inflammation of the breast the changes were many and varied; the epithelium of the acini underwent various alterations of form and arrangement, and might proliferate and project into the cystic acini, but were always surrounded and attached to a thin fibrous basement membrane in simple conditions; if there were clumps of epithelial cells lying loosely in the cavities carcinoma had set in. In his opinion a breast affected with chronic inflammation was in a pre-cancerous state, as also were many skin and mucous papillomata showing invasion of the deeper tissues by superficial cells. In the cervix evidence of development of carcinoma on chronic inflammation was provided by the transition from squamous to columnar and the appearance of definitely malignant groups of squamous cells deep in the muscle. Leukoplakia provided another example. He pleaded for a more intensive study of the morbid anatomy of cancer.

Dr. R. M. Livingstone described attempts to find some difference between true pre-cancerous conditions and similar appearances that were not pre-cancerous. A chemical contrast between acute and chronic inflammation had been determined. The reaction of the tissues in chronic inflammations was invariably acid, while in acute inflammations it was alkaline. Pyogenic micro-organisms at work produced acid which was oxidised by the action of the tissues in acute conditions. It might be that this acid secretion rendered tissues more vulnerable to cancer. Dr. Gye's work bore out this hypothesis. The chemical conditions of the medium which Dr. Gye had found favourable to growth corresponded with the conditions which occur in chronically inflamed tissues. In the alimentary canal fermentation and putrefaction produced similar substances to the putrefiable sugars used by Dr. Gye for culture.

Mr. J. E. Adams described a case of chronic mastitis for which the breast had been removed five years previously; the patient recently returned with cancer in the other breast. Chronic mastitis had been regarded as a pre-cancerous condition, but he and Mr. Halliwell had followed up 135 cases of chronic mastitis where the breast had been removed, and in only four or five cases had cancer developed. It was very hard to find any clinical connexion between the pre-cancerous conditions and carcinoma. Obviously any condition that upset the cellular balance might be regarded as pre-cancerous.

Mr. Lockhart-Mummery said that the commonest precursor of cancer in the large bowel was the simple adenoma, which constituted 80 to 90 per cent. of all the growths met with there. It was possible, however, that other growths might result in carcinoma. It was possible to have two or three carcinomata in the same intestine at the same time, not necessarily as a result of grafting. He had known two cases of carcinoma supervening on diverticulitis, but both were peculiar in that they had perforated.

Mr. D. C. L. Fitzwilliams said that the process of cancer formation in the breast was that for some unknown reason the epithelium became active; when it had transgressed the normal limits of proliferation it might be called pre-cancerous. If it disappeared altogether the result was a cyst and no cancer; if it remained the condition was suspicious. If the ducts were dilated the cancerous cells would escape into the tissues. If a wart appeared it would become carcinomatous in about 12 months. When the basement membrane had been penetrated cancer appeared. The undoubted influence of long chronic irritations seemed to indicate that direct bacterial action was not the cause of cancer. There had been practically no advance made in this subject since Boerhaave first suggested that cancer was the result of chronic irritation.

Dr. E. Haydon asked whether tuberculosis disposed to cancer, quoting cases from his practice in Devonshire, where there seemed to be a special hereditary disposition to cancer, as cases were very frequent.

Dr. Carnegie Dickson said that the pathologist was faced with the most difficult task of setting the margin of malignancy. Many simple tumours could become malignant. In 90 per cent. of cases of chronic hypertrophic endometritis, for instance, the epithelial cells were passing the basement membrane, but not all of them were definitely malignant. He thought frozen sections in the operating theatre were liable to mislead, as a tumour might vary so much in appearance in different parts. It was easy to think there was malignancy when it was not present; metastasis was not necessary for the diagnosis. He regarded myeloma as malignant, although it was often classed among the simple tumours; it certainly had local malignancy. He also regarded rodent ulcer as malignant.

The President, in replying, said that Mr. Fitzwilliams went much too far in saying that cancer was not due to bacteria. Recent experiments had shown that mice could be rendered immune by injection of the ultra-microscopic virus.

Dr. W. Newcomb demonstrated illustrative slides, with particular reference to gastric ulcer and carcinoma. A proof of the previous existence of an ulcer was the fusion of the muscularis mucosæ with the triated muscle of the stomach wall.

HUNTERIAN SOCIETY.

A meeting of this Society was held on Nov. 9th, Dr. F. H. Humphris, the President, in the chair, when the Bishop of Kensington opened a discussion on the

Relation of Spiritual Healing to Modern Medicine.

To many people, said Dr. Maud, spiritual healing suggested necromancy and magic—something not quite canny—especially if the practitioner held the office of, for example, a bishop. The term spiritual healing was hard to define. It had become so confused and meant something different to everyone who used it. It would, however, be hard to give a clearer definition than that put forward by the Lambeth conference. They found that healing was divided into three avenues: the material, which included surgery, the use of drugs and diet, &c.; the psychic, which included analysis, suggestion, and hypnotism; and the devotional, which included prayer, the Sacraments, and reliance on God. Spiritual healing could not be confined to the devotional avenue. All healing was spiritual, and the only unspiritual healing was that which is performed without God. From this point of view he considered the work of the Hunterian Society as emphatically spiritual. Anyone who put his soul into touch with God was by that act alone exercising spiritual power. Unfortunately many people had tended to interpret the term "spiritual healing" as a method directly opposed to physical medicine. It was as unscientific to exclude the physical side as to exclude the mental, for man is composed of body, mind, and spirit. The proper use of faith healing was to use a man's belief in God to reinforce the powers of his body and mind and make him every whit whole. Healing was not simply the removal of physical ailments nor even of faults of character, but the harmonising of a man's whole personality; this was the real health and this was what was meant by holiness. It was disastrous to regard a man as healthy because he had a sound body; to omit the spirit was to omit the decisive factor. The object of the Church was to bring about coöperation between all the means whereby a man could achieve holiness. Methods could not be kept in water-tight compartments. Many people thought that spiritual healing was a matter of faith or suggestion, a department entirely by itself. It was the Church's duty to use all the methods and means given to us and to spiritualise what might so easily become materialised. Much harm was done by the popular feeling that to send for a man's spiritual adviser was an immediate preliminary to sending for the undertaker, and for this reason doctors often deprecated the advent of the parson. It was true that the office for the Visitation of the Sick dated back many hundreds of years and reflected the mind of that period—to a large extent still the mind of to-day—that all illness was the will of God and should be accepted meekly. This attitude contrasted strongly with that of the doctor, whose job was to fight disease to a finish and conquer it. The Church's business was the same, and ought always to have been so. The attitude of Christ was that any form of ill was essentially contrary to the will of God. God's will was health: "I am come that they might have life . . . more abundantly." It was because the Church had not upheld the Christian doctrine in this respect that it had put itself out of court. There was at the present time every reason to hope that the misconceptions which had separated the two professions could be cleared away, and that the help which the Church ought to be able to give in this matter was just what the medical profession would welcome. If we could change people's minds, external things would soon change too. The process was not one of auto-suggestion, depending on one limited personality, but a linking-up with the mind of God. Prayer for the sick was not simply petition. It was getting up to the mind of God and letting the minds of the congregation reflect the thought of the mind of God for the sufferer.

Dr. F. G. **Crookshank** said there seemed to be an urgent need for definition of terms, but that the patron of the Hunterian Society had said that of all things definitions were most to be condemned. We all knew what we meant by the relation between spiritual healing and modern medicine, but we seldom knew what other people meant by it. We needed to think about it, but unfortunately again the great Hunter had exclaimed, "Don't think; try!" The medical profession had been trying hard for many years not to think, with a very fair measure of success. In a way they were right; thinking might lead to a loss of that self-confidence which was so essential a factor in gaining the confidence of others. The general attitude of the medical profession to spiritual healing was something like: "Oh, well, it's all a matter of suggestion, if it's true at all, and any case that was cured by anybody but a doctor must either have been a functional disease or else it wasn't cured, one or the other. Of course, a functional case isn't worth bothering about unless it's rich, and then you consider what operation you might do, or else give it some bromide. As for all this curing by prayer, it ought to be stopped, and it will be when we get a decent authority at the Ministry of Health who will do what the B.M.A. tells him to." Which attitude was very satisfactory to those who held it, but if we wanted to advance the matter we must be very careful not to mistake words for ideas and interpretations for facts. What we took for observed facts were too commonly interpretations. Medical prejudices were never more dangerous than when they dwelt in the minds of doctors who said they had no prejudices. So long as doctors derived their working principles from the dreary agnosticism of the last century, which said that although the physical could and did determine the psychical, the psychical could never affect the physical, so long must there be an unbridgeable gulf between them and the theologians. So long as we believed that mind is a function of matter, so long should we deny that spiritual treatment could affect the physical condition and maintain that spiritual cures were either fancy cures of real disease or real cures of fancied disease. But the psycho-analysts had shown that states of mind must be held responsible for many organic conditions, and it was not good enough to dismiss spiritual healing as phantasy, suggestion, or emotion. Some thought this disposed of the problem, but actually it only made it more difficult. The Huxley-Spencer metaphysics had resulted in a neglect of functional disease by the medical profession; it was a curious thing that this should have been remedied and liaison made possible by the psycho-analytic school, so hated by the theologians. What was hindering reconciliation was that the theologians did not adopt any clear metaphysical creed. It would be helpful if the Protestant churches would define what they postulated as the relation between mind and matter. For his part Dr. Crookshank recognised the truth of the old French physician, "Le médecin fait ce qu'il peut, mais le Dieu seul connait l'humanité." There was no reason why the cure of organic disease, however defined, should not follow prayer and spiritual healing, however defined. There was need to clear away the bogy of distinction between functional and organic disease and between physical and psychical therapeutics. Objectively they were indistinguishable. In the most functional disorders of all there was room for organic changes not yet visible to us. Organic disease might be defined as what we say we can cure and functional disease as what the quacks cure and we wish we could. The surgeons said that the physician's nasty drugs acted by suggestion; why should not the physician say that the surgeon's sanguinary operations acted in the same way? Prejudice and verbal lumber should be set aside to make clear what really does happen. The medical profession had no right to regard the business of healing as their prerogative; their function was to rationalise the business of healing for the benefit of the community. All creatures had the power of reparation, from an amœba to an archbishop, and we called that power the *vis medicatrix naturæ*. A belief in miracles was essential to the doctor's art. The miracle of healing represented the manifestation in ourselves and for others of that power possessed by all creatures for themselves. Why should not some people possess this power in an excessive degree and be able to bring it into consciousness? Were there not human beings who possessed power to heal others in a way that could not be rationalised? The power was exceptional, of course, and comparable with the musical genius of an untaught child. Why did the dog and cat seek a special grass when they were unwell? Cases of spiritual healing might be divided into two groups. In the first there was direct relationship with an objective personality, enriched with more or less ritual and appeal. Successes obtained were unsubstantial unless there was a simplicity of character and strength of personality behind the ritual. The instrument was usually one who had undergone the mystic experience, which was more common than was believed by those who had not had it. Healing was only obtained when the natural powers were released, whether this were in the Harley-street consulting-room or the revival tent. Quite essential was a certain sense of need and helplessness and dependency on a higher power. Dictation of treatment was a bar to conversion or cure. In the second group were those healed by such means as prayer, shrines, waters, &c.; these were mostly functional cases. Spiritual healing was a function of the religious experience in one form or another; there was no justification for holding it to be the monopoly of one creed or one form of practice. It was a curious and interesting fact that although neuroses were very common among Jews, yet faith-healing made no appeal to them, and even the Jewish exponents of psycho-analysis based their theories on purely material grounds. On the other hand, the standard of health was nowhere so high as among the Quakers, who were mystics, and the Plymouth Brethren, who believed profoundly in spiritual healing. The scope of psychotherapy was co-terminous with the whole range of disease, though never to the exclusion of physical remedies. Spiritual methods could be used to mobilise or release that innate capacity of reparation possessed by all, but so often restrained by mental rigidity. Dr. Crookshank was astonished that the theologians did not realise more the strength of their position.

The Rev. **HAROLD ANSON** said that it was important for the clergy and doctors to define spiritual healing; it meant the healing of the whole man, body, soul, and spirit, by all those methods which are according to the will of God or sound logic. In the future it would be quite impossible to heal people in departments. He had been trying for many years to act on this doctrine, and his clerical friends seemed to regard him, until recently, as a dangerous lunatic and the doctors as a criminal. In a neighbourhood full of misery resulting from tuberculosis, venereal disease, and alcohol it was highly unsatisfactory to build a big hospital where the symptoms of these conditions were cured and the patients sent back to the same surroundings and the same misunderstandings. The scientific way of healing was to remedy the unsatisfactory spiritual condition which had produced these diseases—the community's ignorance of what life really is. There was a type of spiritual healing which really tried to get at the underlying wrong thought. Even organic cases could be cleared up by inquiring into and treating home difficulties and distresses.

Canon **DOUGLAS** said that he had had no experience of supersession of natural law. Spiritual healing was coöperation with God to remove an evil. He pointed out that prayer was a concentration on need rather than an uttered petition; it was only valid if backed by the whole human purpose. It was not auto-suggestion nor reliance on some outside power. Spiritual healing was the result of man's efforts with God's coöperation. He had known a case of instantaneous healing in his own experience, but did not regard these events as important; the work of the parson was to get people to concentrate their minds.

Dr. M. **LEAHY** said that he saw no reason for any conflict between the clergy and the doctors. The ills to be healed were of three kinds—bodily, mental, and spiritual—and all three could act and react on each other. Modern medicine was concerned with body and mind; it had nothing to do with eternal salvation, but doctors were nevertheless often asked for advice by patients racked by spiritual doubts. These cases were best left to the spiritual adviser unless their doubts were producing mental disorder. Cases of religious mania and melancholia were better in the hands of doctors. There were two lines of treatment, surgical and medical, and the latter was again divisible into physical and mental. Spiritual healing certainly could not cure gross surgical injuries, acute conditions, or infections by bacteria. The spiritual healer cured by appealing to the mind of the patient, by asking the patient to put his trust in God; why should not the mind be given the credit for the cure? Belief in God and the hereafter was undoubtedly good for man, but an appeal in such terms did not always cure. The cure, when it occurred, was mental; why insist on spiritual intervention? Belief was a mental attitude. He illustrated the mental cure by three cases, one of organic nerve lesion, one of functional paralysis, and one of spiritual doubt. The Primate had set up a permanent committee of six psychotherapists and six clergymen to be advisers to the Church about all such questions as spiritual healing, healing missions, moral obsessions, &c., and there was every reason to hope that an extraordinarily useful phase of coöperation lay before us, particularly in asylums, prisons, and infirmaries. Dr. Leahy had been astonished to find how few asylum chaplains or their medical officers considered that helping the patients was part of their work.

Dr. **EDWIN ASH** said that his considerable experience of psycho-therapeutic measures and his observation of spiritual methods had led him to the conclusion that there must be a focusing point of the influences at work, a centre of action of all these healing measures, and that point was the neurone. The weak point in modern psychotherapy was its forgetfulness of the neurone. There must be some point of fusion or reaction between mind and matter. It was the neurone; the nerve cell was like a condenser tuned to respond to the influences of mind. In spiritual healing we had a way of activating the neurone, by some means not yet understood, through the subconscious mind. If it would react to activities at the periphery surely it must be expected to respond to the higher psychic processes. Spiritual healing should not be concerned with medical matters, such as diet, hygiene, or manipulation. Certain kinds of approach, such as prayer, led to a general improvement in the patient's health rather than to specific healing. The cures would be found eventually to be wrought by natural law on natural mechanisms. Ignorant talk of spiritual healing tended to show its relation to medicine in a false light.

Mr. **MORTIMER WOOLF** said that the ideas of spiritual healing and coöperation had grave dangers; it was a form of atavism to the days when patients looked, and were encouraged to look, to hopelessly ineffective methods for salvation. He asked whether these views were going to influence the public to think that their diseases could be cured by spiritual means and to avoid the practical necessities of modern medicine. If the clergy wanted to coöperate with the doctors they ought to have the same knowledge of fundamental biological processes that the latter won by long years of probation and study.

Dr. **LANGDON BROWN**, in proposing a vote of thanks to the Bishop, said that the day of neglect of functional disease was now gone; the modern doctor knew that when a patient said he was ill when he was not ill he must really be very ill indeed. There was much misery abroad in the world just now, but it was due to a severe attack of growing pains. The hope of the human race lay in the third stage of growth—not physical nor mental, but psychological evolution.

ASSURANCE MEDICAL SOCIETY.

A MEETING of this society was held on Nov. 4th at the house of the Medical Society of London, Chandos-street, W., when Dr. G. G. **HOWITT** presided, and Dr. S. **VERE PEARSON** read a paper on the

End-Results of Artificial Pneumothorax.

The method, he said, was by no means a "cure all" for pulmonary tuberculosis, but it was none the less a great advance in treatment. Patients should be given a chance first to recover under ordinary sanatorium régime, and the cases he would quote were only those which had been given that chance and had failed to respond. All of them had been in the third stage of the disease and had had tubercle bacilli in the sputum. Of 67 patients treated with complete artificial pneumothorax at Mundesley Sanatorium between 1910 and 1922, 26 were now well and working, 35 were dead, several were untraceable, and two were ill with pulmonary tuberculosis. Nine further cases had had their treatment started elsewhere, and four of these were well and the others dead. Of 17 cases of partial pneumothorax eight were now dead and four were well. The average length of life of the 48 patients who had died was $2\frac{1}{3}$ years.

Fourteen cases in which pneumothorax was proposed, but was found to be impossible owing to adhesions, might reasonably be compared with the ones treated. Of these 14, 64 per cent. were dead, whereas only 51 per cent. of 77 complete artificial pneumothorax cases had died. Similar encouraging results, obtained with a larger number of patients, could be found in Dr. J. Gravesen's recent work, "The Surgical Treatment of Pulmonary Tuberculosis," and considering all things it was satisfactory that 32 per cent. of pneumothorax patients from Vejlefjord were still able to work 2 to 12 years after discharge, and that 39 per cent. of those from Mundesley were still able to work 3 to 15 years after starting treatment. Such figures compared favourably with those for general treatment. It would hardly be too much to say that in any case of moderately advanced pulmonary tuberculosis which was fairly unilateral the prognosis was best if artificial pneumothorax was undertaken and proved feasible. Re-establishment of full working capacity could hardly be expected during the first few years; rapid complete recovery was most likely to occur in young patients with sound contra-lateral lungs. The pneumothorax ought to be maintained for at least three years—and often as much as five—and the refills had to be done, on the average, every six weeks; but this did not, as was often imagined, mean invalidism for the patient. The average period for refills in his own patients who had made good recoveries was four years and four months.

Discussion.

Dr. L. S. T. **Burrell** said that the treatment was too new for any well-defined conclusions to be drawn. From the assurance point of view any case that had had active pulmonary tuberculosis was a bad case, but probably those in which artificial pneumothorax had been done were the most hopeful. Considerable study of post-mortem findings had convinced him that the lung on the side treated tended to heal, whatever might be the fate of the other. Whilst he was far from suggesting that the treatment was contra-indicated in bilateral phthisis, he thought it hardly fair to condemn a unilateral procedure because it did not cure both sides, and it seemed reasonable to judge its therapeutic success or failure from its effects on cases in which, as far as could be ascertained, only one lung was diseased. In 1922 he had published results of a series of 43 such cases in which T.B. had been present in the sputum, and two or three months' ordinary treatment in bed had failed. Of these 43 he had described 27 as "arrested," and now, three or four years later, he had found that 24 could still be called arrested and only two had died.

Dr. **Batty Shaw** said that the experience of the two previous speakers made their opinions very important. Unfortunately, the insurance companies demanded exact figures; they wanted to know what were the mortality statistics of patients with an artificial pneumothorax compared with those of healthy people of the same age. Till such statistics could be collected a case of pulmonary tuberculosis would have to be regarded as such regardless of whether it had a pneumothorax or not.

Dr. F. G. **Chandler** said that if a proposer for life assurance had had artificial pneumothorax treatment which had been completed and the lung had expanded again, the assessment of the risk would be the same as in any case of arrested tuberculosis and would depend on the extent of the disease, the general condition of the subject, the ability to undertake full work, the functional efficiency of the lungs, the environment, the intelligence, the length of time since the apparent complete arrest and since tubercle bacilli were last found, the presence or absence of physical signs, the family history, and the complete absence of any suspicious symptoms. Whether the arrest had come about by natural means or by artificial pneumothorax made no difference from the life assurance point of view. If the proposer was still undergoing the treatment, the loading must necessarily be heavy, with later reconsideration, for however well the individual might be there were risks. It was well known that men might do manual work or women bear children, but it was necessary to remember the risk of pleurisy which may possibly interfere with the treatment, the risk that when the lung is allowed to re-expand the disease may awaken into a renewed activity, the risk that the treatment may be abandoned, and the remote risk of a spontaneous pneumothorax. It was interesting to note that nothing had been said of artificial pneumothorax as an immediate measure as soon as the diagnosis of pulmonary tuberculosis was made, and he strongly believed that the early case should always be given a chance of responding to ordinary treatment.

Mr. F. **Sheriff** said that pneumothorax provided a new problem in medico-actuarial practice. The question was: Could a life office offer better terms in the cases treated? Unless the life could be considered an average one it would be unwise to accept such a case, except possibly after the lapse of several years if the general condition and other factors were perfectly satisfactory. Probably the best solution was to impose a decreasing debt extending over a period of 10 or 15 years according to circumstances.

Dr. **Basil Price** said that in weighing up the end-results it was desirable to differentiate between those patients in whom the measure was attempted with the idea of arresting the disease and those in whom it was hoped merely to prolong life. In patients of the latter group there were, however, some remarkable recoveries. He illustrated the difference in prognosis in the two types of case by referring to a series of results obtained by Dr. Alexander Snowden. Of 27 cases in which artificial pneumothorax was done to prolong life only ten remained alive after two years, but of eight in which it was done in the hope of arresting the disease all but one survived over the same period.

The **Chairman** said that the information collected was a useful beginning. It was important to know the facts about the treatment because more and more cases would be coming up for assurance.

Dr. **Vere Pearson**, replying, said that Dr. Burrell's statistics suggested that the majority of those patients who survived three or four years after having an artificial pneumothorax would still be alive after another three or four years. The percentage of cases in which pneumothorax had to be abandoned on account of complications was very small indeed.

An Orthopædic Hospital School.—A conference of representatives of local authorities and other organisations concerned has been held at Nottingham to consider the desirability of providing an orthopædic hospital school for the counties of Nottingham, Leicester, and Lincoln. The Duke of Portland has offered a site of 15 or 20 acres, between Nottingham and Mansfield, and the conference has appointed a committee to inquire into the cost of erecting such a school and the extent of the support likely to be given.

Mr. W. B. Cosens and the Dorset County Hospital.—Mr. W. B. Cosens, who has been honorary surgeon to the Dorset County Hospital since 1895, has resigned that post owing to stress of work; but so intimately has he been connected with the progress of the hospital that it is proposed to mark his services by asking him to retain six beds, together with the rights and privileges of a member of the honorary staff. The opening of an operation room by Sir Frederick Treves in 1903 was a result in large measure of the energy of Mr. Cosens, as also was the provision of children's cots, the installation of X ray apparatus, and the improvement of the hospital in many ways. The committee recently acknowledged with gratitude the sum of £1000 which had been raised by Mr. Cosens for a new electric lift. In the closing years of the last century the average number of operations performed during the year at the hospital was less than 40, whilst now the average is 400.

Reviews and Notices of Books.

TUMOURS OF THE SPINAL CORD.

By Charles A. Elsberg, M.D., Professor of Neurological Surgery, Columbia University. London: H. K. Lewis and Co. 1925. With 354 illustrations. Pp. 421. £2 10*s*.

This is a model monograph. Written by a neurological surgeon of experience, and based on the study of 100 spinal tumour cases personally investigated and treated, it redounds to the credit of all who have contributed to the end-result—a handsomely printed and lavishly illustrated volume conveying information of that practical character which alone can serve. Spinal tumours are not rare; most are amenable to operative interference, and the clinical results not infrequently are brilliant. To attain such desirable results diagnostic acumen of a high class is requisite, for the compression syndrome of the spinal cord follows a variety of pathological processes not all of which lend themselves to successful treatment at the hands of the surgeon. The author describes at some length the diagnostic features of spinal tumours considered generally, and also from the local or regional point of view; distinctions are drawn between intra- and extra-medullary growths, and, finally, differential diagnosis from other conditions of spinal column, membranes, and cord is examined. The reader might suppose from all this that diagnosis has been so simplified as to have reached the stage of "certain," but this is in reality not so. What will impress the student, however, is the evidence furnished by Prof. Elsberg that for accurate diagnosis the radiologist and clinical pathologist have an indispensable contribution to make.

Prof. Elsberg does not appear to utilise the scapulohumeral and carpo-metacarpal reflexes in cervical cases, though their localising value is considerable; nor does he seemingly refer to the bulbo-cavernosus reflex, of similar usefulness in cauda equina and conus cases. There are but scanty allusions to clinical disturbances in the sexual mechanisms in the latter type of case, and none, as far as we have seen, to modifications in body temperature in cervical tumours. Deviation of the umbilicus is another localising sign, of great significance when it occurs, that does not appear to have been remarked or used. But if some differential minutiæ are ignored the general rules of the diagnostic game are fully coded and illustrated. The pathological and surgical sides of the question are particularly well treated, as is to be expected. We congratulate Prof. Elsberg on his mastery of his subject and on his splendid clinical results.

SURGERY.

Selected Papers. By F. T. Paul, D.Sc., Ch.M., F.R.C.S., Consulting Surgeon, Liverpool Royal Infirmary. London: Baillière, Tindall and Cox. 1925. Pp. 292. 15*s*.

This is a reprint of a number of contributions to surgery made by Mr. Paul and is published by the surgeons to Liverpool Royal Infirmary to commemorate his seventy-fifth birthday and the fiftieth year of his membership of the Liverpool Medical Institution. Paul's name will ever be associated with the surgery of the large bowel, and it is interesting to read here the position of this branch of surgery just 30 years ago and the problems which confronted surgeons of those days. With great courage Mr. Paul describes how of seven patients in whom colectomy was tried, four died, and how, as a result of this experience, he was led to devise the operation which goes under his name, and which was followed by most happy results. The first use of a glass tube in acute obstruction of the large bowel was described in 1891. The author also did experimental work on gastro-enterostomy and intestinal suture. In 1892 "the operation of gastro-enterostomy was a prolonged process of careful suturing and was extremely fatal. The bone plate method has changed all this." Yet even after this the aperture nearly always closed down in a very short time, and the symptoms of obstructed pylorus returned. Paul devised an experimental method using bone rings, which was more successful. On page 232 he makes an interesting comparison between enlargement of the prostate and involution mastitis, and in another chapter brings forward evidence in support of the view that chronic mastitis leads to carcinoma mammæ. Both these matters still remain undecided and obscure to this day.

It was a happy thought to publish this collection of papers. We have read the book with great pleasure.

Die Chirurgie. Edited by Prof. Dr. M. Kirschner and Prof. Dr. O. Nordmann. Berlin: Urban and Schwarzenberg. 1925. Vol. III. Pp. 228. M.12.

This volume contains accounts of the surgery of the liver and gall-bladder, written by Prof. Heller, of Leipzig, and the surgery of the pancreas, by Prof. Riese, of Berlin. It may be said at once that the high standard set by the two former volumes has been maintained. Both writers treat their subjects systematically and fully. There is a very good account of the anatomy of the gall-ducts with its variations, and, what is very commendable, a section on the physiology and the so-called pathological physiology of the liver. As was to be expected, the section on gall-stones occupies a large number of pages, and in whatever part of the subject the reader is interested, he is sure to find an adequate account. Cholecystectomy from neck to fundus and fundus to neck are both described, and guidance is given as to which method to select, and there are helpful recommendations on when to explore the common duct and when this step can be dispensed with. A warning is issued concerning closure of the abdomen after cholecystectomy. Heller holds that careful selection of cases must be made to avoid trouble after closure without drainage. The account of pancreatic surgery is as good as that of the surgery of the liver, though naturally it possesses a lesser appeal. The book is well printed, and the illustrations are produced with that excellence we are accustomed to find in German publications.

A TEXT-BOOK OF OPERATIVE ORTHOPEDICS.

By A. Steindler, M.D., F.A.C.S., Professor of Orthopedic Surgery, State University of Iowa. London and New York: D. Appleton and Company. 1925. With 83 plates. Pp. 403 + xv. 30*s*.

Dr. Steindler tells us in his preface that he considers that the manipulative and conservative treatment still has and should have "a hold upon the majority of orthopedic conditions," and it is obvious that under the term "Operative Orthopedics" he includes only such proceedings as necessitate the use of the knife, excluding subcutaneous methods. He has, we think, successfully carried out what he himself describes as the very difficult task of selecting the methods which are the most valuable. He may have been a little premature in including sympathetic ramisection and a little behind the times in retaining the almost abandoned proceedings recommended originally by Vanghetti for the kinematisation of amputation stumps. A somewhat remarkable omission is that of the operative treatment of fractures by such methods as those of Lane and Hey Groves. Subcutaneous tenotomy is dismissed by the author with only a brief description of the operation on the tendo Achillis, although he says that the method is still extensively used. We demur strongly to his statement that in "the early—pre-antiseptic—era even the subcutaneous tenotomies constituted a formidable operation which was often followed by suppuration and other accidents." It would be interesting to learn on what evidence this statement is made, and what was the nature of the "other accidents." We should have thought that it is notorious that the Stromeyerian method owed its wide acceptance to the fact that suppuration scarcely ever follows operations performed according to its principles.

This book will be instructive to surgeons who wish for the first time to perform any of the operations described in it, or who may require to refresh their memory as to details. It will also help them to judge of the prospects of improvement or functional cure which the various proceedings offer. There is a chapter on the Principles of After-Treatment which might well have been longer, for in orthopædic surgery it is a commonplace that at the end of the operation the treatment has, in many cases, only just begun. The book is well printed and the reproductions of drawings and photographs are clear, except a few of the latter which might well be replaced by diagrammatic drawings. There is a copious bibliography with an index of authors and an index of subjects. In the former Sir D'Arcy Power appears under the letter D as "D'Arcy Powers" and Mr. Hey Groves under H as "Hay-Groves."

SEX AND BIOLOGY.

The Sexual Life in its Biological Significance. By J. RUTGERS, M.D. Translated by NORMAN HAIRE, Ch.M., M.B. Dresden: R. A. Giesecke. In six parts. 3*s.* each.

THE author of this work, which comprises six parts in all, was an early advocate of birth control in Holland and believes that problems concerning conduct and happiness should be the concern of all and not limited to savants. In this he is in accord with those modern tendencies which would replace sexual ignorance by knowledge. Part 1 treats of the anatomy of the sex organs, but is discursive and unnecessarily complicated; it is not easy to see what benefit is derived by drawing an analogy between the gonads and pathological tumours or inflammatory products, nor to follow the assumption that the substances secreted by a gland are its waste products, and hence the testes and ovaries are not glands. Quite contrary to medical teaching in this country is the statement that vaginal injections are especially important after menstruation, even in young girls. In Part 2, which deals with physiology, the statement is amplified by the warning that if this practice is neglected "everything goes wrong at the first attempts at connexion." In fact, the sound information and advice that the author offers is marred by frequent observations that are not within ordinary experience. In the section on self-control, for example, we read that "if we remain seated too long at a time the abdomen is doubled up, especially if we lean forward; fatal symptoms of congestion and venous stasis may even occur." The context suggests that these results happen in the seminal vesicles. Dr. Rutgers will find wide agreement here regarding the need for sexual enlightenment, but we fear that the result upon the layman of reading this work would not be to bring sexual information into line with other knowledge, but to make of it something further apart. The translation is well done and presents no trace of German idiom.

A MEMOIR OF BUTLER.

Henry Montague Butler, Master of Trinity College, Cambridge, 1886–1918. A Memoir by his Son, J. R. M. BUTLER. London: Longmans, Green and Co. 1925. Pp. 305. 12*s.* 6*d.*

ANY son who sets out to write a memoir of his father must necessarily start at a disadvantage, for it is almost impossible that he should escape bias. Mr. J. R. M. Butler has, however, overcome the difficulty, and though the love and reverence which he felt for his father are obvious throughout the book, yet as a whole the memoir is "true and indifferent." Butler's life is set out mainly from his own letters, sermons, addresses and the like, and from the estimates and opinions of his contemporaries. The account of Butler's career at Harrow (reviewed in THE LANCET, 1920, ii., 1148) was written about five years ago by Mr. Edward Graham, but as an Oxford man Mr. Graham felt that he would be at a disadvantage in writing an account of the Head of a Cambridge College, and the task devolved upon Mr. Butler.

When Henry Montague Butler was called to preside over Harrow School he was only 26. After spending 30 years at Harrow he became Dean of Gloucester, but after 15 months Lord Salisbury offered him the Mastership of Trinity, a post not without justice considered as the highest distinction in the academic world. He accepted, not without many misgivings as to his fitness, for he was beginning his Mastership at a difficult time in the history of the College. A new régime had commenced under the statutes of 1882, only four years before Butler was instituted in December, 1886; he was Master by a Crown nomination and not by that of the Society, many of whom would have preferred a layman, and he followed two such exceptional Masters as Whewell and Thompson. How he overcame all these difficulties, how faithful and honoured a servant he was of the great Society over which he presided, may be found in the records collected by his son. He had one faculty which is a predominant help to anyone who is called to rule: he always tried to see the best side of a man. Apart from his magisterial office he was, says Mr. Butler, "a great humanist; he was not a great savant." Instances of his finished scholarship are scattered through the book, and range from the beautiful "Frater, ave atque vale" (dedicated to the surviving brothers of the son, Gordon Butler, who died at Kantara in 1916) to the delightful odes upon the two dogs, Carlo and Jet, with their Horatian memories, and the amusing English verses written to help novices concerning Greek particles.

THE HARROW SCHOOL REGISTER.

1845–1925. Second Series. Edited by J. H. STAGDON. In two volumes. Vol. I., 1845–1885; Vol. II., 1885–1925. London: Longmans, Green and Co. 15*s.* per vol.

COINCIDENTLY with the biography of the great Harrovian reviewed above there appears a new edition of the Harrow School Register. The last issue, which appeared in 1910, was already unwieldy, and it has been found convenient to divide the book into two volumes. The new edition is naturally swollen by the records of the Great War. They show not only much distinguished service but a toll of over 600 lives. Dr. H. Saunders, Dr. F. Bennett, Dr. D. V. Cow, Dr. W. E. R. Wood, and Dr. A. R. Chavasse are amongst those who have died since the last edition, and in last year alone Harrow lost two of her most distinguished medical sons in John Hammond Morgan, C.V.O., and Sir G. A. Critchett, K.C.V.O. There are rather more than 50 medical practitioners in the Register.

THE HOUSE OF HEALTH.

By Sir JOHN ROBERTSON, C.M.G., O.B.E., M.D., B.Sc. Medical Officer of Health, Birmingham. London: Faber and Gwyer, The Scientific Press. 1925. Pp. 192. 2*s.* 6*d.*

THIS little book represents one of the latest additions to the series of "Modern Health Books," the aim of which is to place the facts of the chief problems of public health within the reach of the citizen of average intelligence. Sir John Robertson has obviously approached his task with pleasure, and has carried it out with skill. He is quite convinced that a house is something more than a mere assembling of bricks and mortar and so he has laid considerable stress on environment. Tracing the types of dwelling from the snow huts of the Laplander and the sampan of the Chinese to the garden suburb houses of the present day, he shows that it is largely education which has led to the demand for better houses. After discussing the very important question of the site, the atmospheric surroundings, and the water-supply, he goes on to deal with town-planning and the construction of the individual house. He shows as much familiarity with domestic needs and problems as with matters of material and building work, and even the difficult question of finance is cleverly tackled. He deals in some detail with the structural arrangements, internal and external, of a house for an artisan's family of average size, and everything, including cupboards, the bath, the oven, and a place for the pram, receives due consideration. This is a thoroughly fascinating little book, which should be read by all those interested in housing and its problems, and these closely touch most members of the community.

JOURNALS.

The Journal of Physiology. Edited by J. N. Langley, Sc.D., L.L.D., F.R.S. Vol. LX., No. 4. September, 1925.—The Coagulation of Blood Plasma when Divested of Corpuscles, by J. W. Pickering and H. G. Reeves. The experiments aimed at determining (1) the rôle in blood coagulation of the formed elements of the blood; (2) the capacity of plasma to clot in the absence of all corpuscles; and (3) the nature of the precipitate obtained by the prolonged cooling of plasma in an ice-chest (i.e., the thrombozyme of Nolf). The authors summarise earlier conclusions and describe their own work on the arterial blood of etherised domestic fowls. They found that pure plasma collected in paraffined tubes and centrifugalised in the cold contained all the material essential for clotting and conclude that blood coagulation can occur without the intervention of either thrombocytes or tissue juices. A slight increase of hydrion concentration tended to catalyse the clotting of bird's plasma, and lowering the surface tension of the plasma increased its tendency to clot, but did not provoke immediate coagulation. The precipitate obtained by cooling pure bird's blood to 0° C had the chemical reactions of the "thrombozyme" of Nolf. It contained phosphorus and accelerated clotting, but did not appear to be an enzyme, since it was not destroyed by heating to 100–120° C. The plasma coagulated after the removal of this precipitate.—Length of Muscle and the Heat and Tension Developed in an Isometric Contraction, by A. V. Hill. Results are described of experiments (1) on the relation between length and heat production, using the double sartorius of the frog and the biceps cruris of the tortoise suspended in a special myothermic chamber; (2) on the relation between length and the ratio of tension developed to heat produced; and (3) on the mechanical efficiency of the muscle regarded as an elastic body. Amongst conclusions on the relation of heat production to length of muscle is that in resting unloaded muscle the same effects are found for all temperatures and for all durations of stimulus. A mechanism is suggested of the Fenn effect (i.e., more energy is liberated by a muscle when it does external work).—Analysis of the Heat Production During a Contraction in which Work is Performed, by W. Hartree. The sartorius of a frog was stimulated for 0·1 second at 0° C., and Fenn's result was confirmed that when a muscle shortens, doing work, and provided that the weight lifted does not bear on the muscle during relaxation, the energy liberated in the form of heat is constant—that is, it is the same as the heat liberated in an isometric contraction, and independent of the load. In such a contraction, therefore, the muscle supplies extra energy equal to the work done. Analysis of the heat production showed that, apart from the liberation of this extra energy as work, there is a considerable increase in the heat liberated during the earlier phases of contraction. This extra heat is compensated by a deficit during relaxation.—On the Mechanism of Insulin, Part I.: The Action of Insulin and of the Salts of Guanidine on the Permeability of the Mammalian Erythrocyte, by J. Secker. Evidence—quantitative, chemical, and microscopic—from experiments on the oxalated blood of sheep, ox, calf, and cat is given in support of the view that the mechanism of insulin is to increase the permeability of the cell membrane. Guanidine increases permeability in the presence of calcium.—The Reduced Sensitivity to Insulin of Rats and Mice Fed on a Carbohydrate-free, Excess-fat Diet, by H. W. Brainbridge. Rats and mice fed on a diet containing protein, salts, and vitamins, from which carbohydrate was omitted, developed a high degree of resistance to insulin. Apparently an increased amount of carbohydrate and complete absence of fat makes the animals still more sensitive to insulin than they would be on a complete diet, but this is not definitely proved. The variations in the sensitivity are not due to deficiencies in vitamin A.—The Combination of CO_2 in the Blood of the Bull Frog (*Rana Catesbiana*), by H. Wastl and A. Seliskar. The blood at 15° C. is less well buffered than that of mammals. The reaction is probably of the same order as in mammals, though it may be slightly more alkaline.—The Spread of Activity in the Tenuissimus Muscle of the Cat and in other Complex Muscles, by E. D. Adrian. The tenuissimus is over 10 cm. long and a few millimeters wide, and is composed of parallel fibres with no intersections and innervated by a twig from the sciatic nerve. The parallel fibres, each about 2 cm. long, are held together by endomysium, and a stimulus to the curarised muscle produces a contraction found to be limited to 1·5 cm. on either side of the stimulated point. Other results of experiments are given.—Effect of the Circulation on the Electrical Resistance of the Skin, by F. Aveling and R. J. S. McDowall. Chloralosed cats were used, as chloralose make sthe vasomotor system of animals appreciably more sensitive than ether. Intravenous injection of adrenalin (1/50 mg.) brought a marked fall in the resistance of the skin of the limbs and the pads of the feet. The fall corresponded with the rise of the blood pressure on injecting the drug, and the return of the skin resistance to its previous height synchronised with the return of the blood pressure. The authors show that in the cat a fall of electrical resistance of the skin is associated with the constriction of vessels and that a rise is associated with a dilatation.—A Method for the Perfusion of the Kidney with De-oxygenated Blood of Known Oxygen Tension, by E. W. H. Cruickshank and D. Orahovats. The method is also applicable to other organs of the body, while the rest of the body is supplied with blood having a normal oxygen content.—The Innervation of Smooth Muscle, Part II.: Frequency of Nerve Impulses Entering and Leaving the Superior Cervical Ganglion, by Harry O. Veach and Jayme R. Pereira. The experiments were made on cats, anæsthetised by urethane and chloroform. The movements of the nictitating membrane were recorded after the pre- and post-ganglionic nerves were isolated. It was found that the frequency of discharge from the cells of the superior cervical sympathetic ganglion of the cat is directly proportional to the frequency of reception from the pre-ganglionic fibres. It is probable that the propagated disturbances in passing through the ganglion are not altered decidedly in frequency.—On Cellular Changes in Intestinal Fat Absorption, by W. Cramer and R. J. Ludford. Experiments described suggest that in the synthesis of fat in the cells of the intestinal epithelium during fat absorption the Golgi apparatus is the cell structure mainly concerned.—A contribution to the journal on the Composition of Alveolar Air at Extreme Heights, by T. Howard Somervell, is referred to in our editorial columns.

New Nurses' Hostel at King's Lynn.—Some years ago the Queen suggested a number of alterations and improvements at the West Norfolk and Lynn Hospital, and she recently opened the Queen Mary Hostel for Nurses, which practically completes the programme. The hostel, which has cost £8500, contains accommodation for 24 nurses.

THE LANCET.

LONDON: SATURDAY, NOVEMBER 14, 1925.

PRE-CANCEROUS STATES.

THE practical prevention of cancer consists at present in the recognition of the pre-cancerous states to which the Section of Surgery of the Royal Society of Medicine devoted their discussion on Nov. 4th. Of recognisable conditions we can roughly distinguish three categories. In the first place the decennial supplements indicate clearly that some occupations have a much higher mortality than others without there being any obvious local condition to account for the association. Any boy who gave intelligent study to the occupational statistics of the Registrar-General would see that he would have much less chance of dying of cancer if he was a clergyman or an agricultural labourer than if he was a barman or a general industrial labourer; he might or might not act accordingly. In the second place, there are certain chains of events—Prof. BLAIR BELL calls attention to their number (see p. 1003)—which have been identified as often culminating in cancer—smoking clay pipes, being splashed with hot paraffins in the shale-distilling industry, persistent irritation by X rays, and a great variety of other circumstances which all fall under the head of long-continued irritation and among which those associated with the products of burnt coal seem to stand out pre-eminently. And thirdly, we have anatomical abnormalities which are recognised as precursors of frankly malignant tumours, such as melanotic warts, chronic mastitis, and indolent ulcers. How much cancer can be prevented by attention to these occupational, ætiological, and pathological indications—categories which with fuller knowledge will no doubt be merged into one—depends on how far people are prepared to go in taking preventive measures. Removal of the breasts, uterus, and rectum in early life would be extravagant. More people are probably prepared to refrain from the alcohol trade and clay pipes, to be circumcised, and to take various other precautionary measures not more troublesome. But average men and women will not likely do much more than attend to the general cleanliness and hygiene of their skin and alimentary canal, keep clear of modes of life of known danger, and consult a medical man more freely for comparatively trivial symptoms and appearances.

But these pre-cancerous states have an interest and importance for the understanding of cancer as well as for preventive medicine, and in spite of the study which has been given to them there is still much to be found out. The question has been propounded whether a cell becomes malignant because it gets anatomically out of place or whether it gets anatomically out of place because it is malignant. Such a dilemma comes easily to the mind in the contemplation of the distortion of the epithelium at the edge of an old ulcer, where certainly the normal arrangement of epidermis and dermis is not maintained and in which occasionally a virulent epithelioma may arise. It is established that normal epithelium experimentally displaced in a somewhat similar way does not become malignant. But this is not really conclusive that misplacement is secondary rather than primary. Recent studies have brought out emphatically the length of time which may elapse between cause and effect in cancer; men and mice both need to have their skin irritated for about a quarter of their lives before there is much prospect of its becoming cancerous, and even if conditions are so arranged that a single application of hot tar is effective a long time elapses between trauma and tumour. It may well be that experimental displacements fail to imitate the extraordinary deliberation with which the preliminary changes are achieved. The fact that misplacements may be found commonly by the histologists where clinical experience shows cancer to be a rare sequel is also not a final proof that the primary change is in the cell which then by acquired vice inserts itself and its progeny where it ought not to be. Such an argument assumes that we know that a cancer always progresses to an obvious and unmistakable denouement once it has begun. As a matter of fact, there is very little real evidence that this is so. No natural "cause" of cancer is effective in 100 per cent. of cases; most of the causes which have been identified actually produce cancer only in a small minority of all the persons who appear to be exposed about equally thereto. From which it is not unreasonable to suppose that the body possesses means of protecting itself and that it often brings them into play successfully at the very outset of the change.

The question of the cause of cancer has generally been put in the form, "Why do some people have cancer?" The alternative, "Why does not everybody have cancer?" is not quite the same thing, for it suggests a point of view which looks to the resistance of the body as well as to the injury which is inflicted on it. This aspect of the matter deserves more attention than it has had. An obvious tumour might well be the resultant of the normal consequences of a long life and the capacity of the tissues to keep one another in order. The experimentalist, working intensively in a favourable field, can break down the resistance of almost every mouse by tarring it enough; Miss M. SLYE'S inbred race of mice cannot resist the trivial traumata of their ordinary lives and nearly all of them die of cancer. Such is a possible way of looking at the facts and it has been followed by those who, in their study of pre-cancerous states, have looked at the connective tissue rather than the epithelium. With the powerful weapon of analysis furnished by Dr. W. E. GYE it should not be long before such speculations can be replaced by conclusions.

A GREAT PHYSIOLOGIST.

THE roots of medicine that reach down into the rather barren strata of the past give support to the tree; but the sap comes from the small rootlets which have recently been put out into unexplored soil. The new arborescence of medical science is a direct result of fresh root expansion, in which physiology is a vital trunk. The work of those "growing points" who first branched off into new ground has given rise to such a mass of offshoots that it is difficult to believe that so many dichotomies have occurred in one or two lifetimes. The tentative rootlet of yesterday becomes a trunk to-day; on ceasing active work it passes into the supporting rather than the nutritive structure of the tree.

The career of the late Prof. J. N. LANGLEY illustrates the importance of a single life in so recent a science as physiology. The beginning of the modern biological school at Cambridge was, practically speaking, the appointment of MICHAEL FOSTER in 1871 as prælector of physiology at Trinity College. LANGLEY was one of FOSTER'S first pupils, was inspired by him to take up scientific work, and in 1903 succeeded him in the University chair of physiology.[1] His most important contributions to knowledge were concerned with the movements of granules in the cells of secreting glands, the detailed elucidation of the architecture and function of the autonomic system, the theoretical significance of the action of adrenalin, and the physiology of nerve endings. His work on the salivary glands, stomach, and pancreas has so completely established itself that even in the most recent editions of the current elementary text-books the migration of zymogen granules towards the lumen of the alveoli is illustrated by the figures which LANGLEY drew nearly half a century ago. The study of these granules brought him by a natural transition to the study of the nerves responsible for glandular activity. His mind, intensely critical of scientific generalisations, resented the then current theory of the action of antagonistic nerves. He held the view that, diverse as were the apparent actions of the chorda tympani and the sympathetic on the salivary glands, there was but one form of secretory nerve, the alleged antagonism being in his opinion due to the stimulation of vasomotor nerves simultaneously with those of secretion. This work on the sympathetic and the chorda tympani, and especially on the action of drugs on them, opened up the whole question of the minute anatomy of the sympathetic system, just as the study of antagonist nerves in the heart had brought GASKELL into the same field. At this distance of time it is not very easy to distinguish the precise contribution of each. Perhaps it may be said that GASKELL laid down the broad lines of function, and LANGLEY laid down the broad lines of structure. The rami, grey and white; the number of fibres in each; where they originated and ended; what were their detailed functions—all these were matters of the most scrupulous research in the hands of LANGLEY and his pupils. They were worked at chiefly by the nicotine and degeneration methods.

LANGLEY'S work on the autonomic system was probably his greatest contribution. Had it not been done by him, it may even be doubted whether it would yet have been done at all—at any rate, so well. His later researches were less individual in conception. Other minds reasoned as truly about receptive substances; other hands might have demonstrated the detailed action of adrenalin; but in the minute geography of each fibre of the sympathetic system LANGLEY'S school was supreme. His genius for technique was exactly suited to the problem. The *Journal of Physiology* (a recent issue of which is reviewed in another column) is a lasting monument to the literary side of his work. For more than 25 years he was in practice its editor, and never was a periodical edited with more personal care. Whole articles, even those whose subject matter could have interested him little, were re-cast and sometimes almost re-written; and though this may have been irksome to the authors it produced a journal unsurpassed in quality in the literature of physiology. But LANGLEY'S work is not to be judged alone by its tangible expression. To his pupils its highest embodiment is the ideal of accuracy which he handed on to them—accuracy in expression, technique, criticism, and generalisation. They would agree in believing that the greatest tribute they can pay to their teacher is to hand on that high ideal of accuracy to a future generation of physiologists.

Annotations.

"Ne quid nimis."

THE TOLL OF CHRONIC NASAL FOCAL SEPSIS.

IN his Semon Lecture at the University of London on Nov. 5th Dr. Patrick Watson-Williams spoke of the necessity of the specialist "thinking imperially" of the influence of local diseases in other domains,—of remembering "overseas" sub-infections. The influence of sepsis in the mouth, teeth, and tonsils is, he considers, already appreciated, and is even allowed to obscure the factor of sinus sepsis, although there is little doubt that septic tonsils and adenoids are often only sub-infections from primary foci in a nasal sinus. There are two ways in which such a focus can affect the remainder of the body. The infective organisms may be inhaled or swallowed, or the toxins (sometimes even the organisms themselves) may be absorbed into lymphatic or blood circulation. Before passing on to the second group Dr. Watson-Williams mentioned the frequency of sinusitis in children. It is still necessary to determine how great a percentage of cases of so-called pulmonary tuberculosis in which no tubercle bacilli are found are in reality due to sub-infective pulmonary sepsis. The wasting of chronic sinus sepsis with bronchial sub-infection, nocturnal rise of temperature, night sweats, expectoration, and febrile reaction to exercise, affords a clinical picture hardly distinguishable from true pulmonary tuberculosis and often enhanced by a chronic septic laryngitis. Dr. Watson-Williams regards the extraordinarily high percentage of patients with chronic sinus infections who have undergone appendicectomy or have suffered from gastric or duodenal ulcer as most striking and suggestive, and lays great stress on the rôle of the carrier without obvious signs or symptoms, whose constant throat or nose infection is a menace to those around him. In his lecture he quoted instances of families in which a parent had such an infection, and he attributed the subsequent nasal troubles and large amount of appendicitis amongst the children to this cause. Migraine, supra-orbital and occipital headache are frequently due to nasal sinusitis, and intense neuralgic pain of the fifth nerve, of the tic-douleureux type, may be due to a toxæmic neuritis from para-nasal sepsis. The effects of sinus infection in orbital conditions, in rheumatism, and in neurasthenia are well known. Dr. Watson-Williams rightly regards sepsis as of great importance in nervous and mental disorder, and remarks that in the young delinquent it is very frequently responsible for the acts attributed to Satan. In the past too much has been laid at the door of obstruction caused by adenoids, whereas nowadays it is realised that the degree of sepsis and not of hypertrophy is chiefly important. The relationship of the lymphatics of the pituitary membrane crossing the cribriform plate to the peri-meningeal lymph spaces may partly explain the affinity between nasal sepsis and mind and character; but whatever the extent to which this affinity is particular rather than general, it is very real, and there have been many very striking cases in which melancholia, neurasthenia, and mania had been cured by nasal treatment. Though it may be difficult at present, and perhaps dangerous, to differentiate between those cases in which crime is determined by infections and those in which it is a result of innate moral obliquity, it is necessary, Dr. Watson-Williams holds, to consider how far sepsis should be ranged with other toxic causes of mental and moral degeneration, such as alcohol, morphia, cocaine, or syphilis; thus it may be possible to prevent many social and legal transgressions. Infection may be difficult to detect, and it is a serious error to gauge its intensity by the local inflammatory reaction and outpouring of pus, whose relative absence may even show increased liability to systemic poisoning. The active and real coöperation of the aural, laryngeal, and dental surgeon and the physician is needed; but the amount of slight mental disturbance with alteration in character and power of concentration found in domestic life, and the graver manifestations to be seen in prisons, hospitals, and asylums, make a great deal of trouble worth while. "We have learnt," says Dr. Watson-Williams, "to recover radium from rubbish. Can we afford to maintain in these human dust-heaps numbers of men, women, and children who, if adequately treated, might become useful and happy workers?"

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[1] An illustrated account of the Department of Physiology at Cambridge University by Prof. Langley himself appears as the first article in "Methods and Problems of Education" (Third Series), just issued by the Rockefeller Foundation (61, Broadway, New York).

RESEARCH ON MERCURY DERIVATIVES.

AMONG the routine remedies for leprosy mercury has long been employed. Within the last 30 years its use has been revived and hypodermic injections of various salts have at one time and another been recommended. The introduction of mercurochrome and its value in septicæmia have stimulated renewed interest in mercury as a germicidal agent, and results have now been published [1] of its experimental use in leprosy. A routine dosage of 2·5 mg. per kilo of body-weight was most easily tolerated, a standard 1 per cent. solution of mercurochrome 220 in distilled water being used. In larger doses stomatitis and salivation were produced. The authors consider that the treatment should be given once weekly. Forty-four lepers treated in this manner have now been under observation for at least a year. In 20 of these the disease was of the active advanced type; 16 had moderately advanced lesions; in six there was active leprosy of comparatively short duration; whilst in two the disease showed no signs of activity. The results obtained do not warrant any undue optimism, but it is claimed that a very definite improvement became apparent in some of the secondary lesions; ulcerating areas healed up, while trophic ulcers responded less readily. In a few instances the recurrence of febrile reactions was no longer noted, and after the first injections the majority of patients claimed to experience a distinct improvement in their general health. In leprosy complicated, as is commonly the case, by pulmonary tuberculosis, no improvement in either disease appears to take place. In surgical practice mercurochrome is still on its trial. It has been found by Bristol surgeons to give excellent results in some cases while proving disappointing in others, and the discrepancy suggested Dr. A. T. Todd's combined experimental and clinical investigation which appears on another page of this issue. In general terms he found mercurochrome to be a powerful antiseptic of rapid action, low toxicity, good penetrating power, and little tendency to irritate. It has the further advantage of not precipitating albumen and of being stable in saline solution for long periods if protected from light. Dr. Todd found the antiseptic properties of the drug to be greatly augmented by acidity, its potency near the neutral point being feeble. For this reason he is inclined to doubt the value of mercurochrome in general infections.

A report [2] on the bactericidal action of some other mercury compounds has been published by a number of workers at the Wellcome Research Laboratories and the Wellcome Research Bureau. They considered that valuable information might be obtained by starting with a comparatively simple substance, mercurating it and a suitable selection of its derivatives, and determining the bactericidal action of the resulting mercury compounds. They selected benzaldehyde as a starting-point and have done much useful work along the lines they laid down, using *B. coli* cultures for the experiments. To discover the reactions of the drugs in differing conditions aqueous solutions, serum solutions, and fatty acid derivatives were used. The serum and oil vehicles reduced the bactericidal activity considerably except in the case of the chaulmoogric acid salt of a mercury benzaldehyde derivative where the activity was doubled, owing presumably to the inherent bactericidal properties of the acid.

BASAL METABOLISM AND THE THYROID GLAND.

THE estimation of the basal metabolic rate is a modern clinical method that has rapidly established its value. It provides a mathematical expression of a definite biological phenomenon, the energy requirement of the organism under various conditions. It has greatly helped to elucidate our knowledge of the metabolic processes in disease and is a valuable guide to treatment. In particular it affords the most accurate means of determining the activity of the thyroid and in diseases associated with under- or over-activity of this gland it finds its greatest usefulness. Dr. F. S. Hansman, who is now director of the biochemical department of the Royal Prince Alfred Hospital, Sydney, has recorded in the *Medical Journal of Australia* (August 22nd) the results of examining 190 patients with thyroid disease whilst he was working at St. Thomas's Hospital, London. In a review of the present knowledge of basal metabolism he states that the basal metabolic rate gives a useful idea of the economy of the individual's body as a working machine. The female basal metabolic rate is normally about 7 per cent. lower than that of the male, and experiment has suggested that the female is the more efficient machine. There is general agreement, he says, that the increase during pregnancy represents the sum of the metabolism of mother and child, and that there is no variation in the mother, and the majority of investigators have found no change during menstruation, though it may perhaps occur in some women. The thyrotoxic patient is a most inefficient machine and requires nearly twice as many calories to perform the same amount of work as a normal person, and accordingly large diets and rest are needed in patients with exophthalmic goitre. Dr. Hansman quotes the work of Boothby and others at the Mayo Clinic, who found that on a diet averaging 5245 calories over 17 days there were 699 calories a day unaccounted for, after making the most liberal allowances for all energy outputs. The nitrogen metabolism was normal and protein food exerted its ordinary specific dynamic action. The increase in metabolism may reach 100 per cent. above the normal; 15 per cent. to 25 per cent. above normal may be considered mild and above 50 per cent. severe. He considers that the basal metabolic rate will not give a true idea of how ill the patient is, as the nervous phenomena and the degree of thyroid stimulation by no means run parallel. On the other hand, the basal metabolic rate may give the differential diagnosis between hyper- and hypo-thyroidism. H. S. Plummer and W. M. Boothby [1] have shown that administration of iodine removes all the clinical symptoms of exophthalmic goitre, though the metabolic rate remains high. The theory formulated to account for these facts is as follows: Some chemical appears in the body that is capable of over-stimulating the thyroid; the resulting excess of thyroxin leads to increased metabolism which may reach a high figure without causing the patient any symptoms of distress. These cases Plummer calls "compensated hypertrophies." In the next stage compensation fails because the available iodine is insufficient and the thyroxin produced is therefore imperfect and causes nervous symptoms. The administration of iodine to such cases restores them to the compensated group and the symptoms disappear. Adenomata of the thyroid affect the production of thyroxin in different ways. The tumour may itself produce the hormone or may stimulate the gland to increased production. In other cases the adenoma seems to depress the thyroid activity, while in about 35 per cent. it has no effect. The basal metabolic rate may help the surgeon to determine whether, and how extensively, he shall remove the growth. Removal usually brings the metabolic rate back to normal if there has been aberration due to its presence. Too liberal removal of gland substance with the tumour causes hypothyroidism. Regular estimation of the basal metabolic rate after operation would often enable the doctor to give thyroid medication before serious symptoms of hypothyroidism appeared. The diagnosis of hypothyroidism may be almost impossible from symptoms alone, and many cases of indeterminate "unfitness" would be cleared up by a basal metabolic rate investigation, which would also be a valuable guide to dosage. It is also an unbiased proof of the value of treatment. Valuable statistics could be obtained if all the patients in a hospital were to have routine estimations of metabolism and the various lines of treatment were compared. The interaction of thyroid and pituitary make basal metabolic rate estimations of value in hypophyseal conditions. In acromegaly the rate may be increased or decreased, and when it has become subnormal organotherapy may be very useful. In long-standing cases of Fröhlich's syndrome the rate may be much lowered. Clinicians know that large quantities of pituitary are tolerated if they can be combined with thyroid, and the thyroid itself stimulates pituitary function, but a watch must be kept on the metabolism if the thyroid is to be given without danger of harm.

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[1] The Administration of Mercurial Preparations in Leprosy. Preliminary Report I. Mercurochrome Soluble 220. By Oswald E. Denney, Ralph Hopkins, Jerald D. Wooley, and Boyd G. Barentine (in absentia, Harold K. Marshall). Public Health Reports, vol. xl., No. 35, pp. 1795–1806.

[2] Bactericidal Action of Some Organic Compounds of Mercury. By T. H. Henry, T. M. Sharp, and H. C. Brown. Biochemical Journal, vol. xix., No. 3.

RESPIRATORY PHYSIOLOGY ON EVEREST.

A contribution by Mr. Howard Somervell to the September number of the *Journal of Physiology* describes the results of alveolar air analysis during the 1924 attempt to climb Mount Everest. Alveolar air was collected in football bladders from several members of the party at three different heights above sea level, and the samples were taken down to the base camps and analysed. The altitudes were 14,300 ft., 16,500 ft., and 23,000 ft., and the most remarkable feature of the results was the low respiratory quotient at 23,000 ft., which was due to the small value of CO_2 in the alveolar air. At a great height breathing is so rapid (almost 50 respirations to the minute) that the CO_2 is washed quickly out of the alveoli. It appears that at 23,000 ft. the $(CO_2 \div O_2)$ percentage is smaller by some 3 per cent. than at 14,000 ft. During actual motion upwards the pulse-rate was 160–180 per minute, and sometimes even more. The pulse was regular in rhythm and of good volume, but all who went above 27,000 ft. were found to have dilated hearts which took from one to three weeks to recover. During climbing the respiration-rate was about 50–55 per minute, and when a height of nearly 28,000 ft. was reached 7–10 complete breaths were needed for every single step forward and upward. Breathing quickly and deeply at a great height is very easy owing to the low density of the air. In 1924 none of the party was affected mentally by the altitude, as in 1922; minds were clear and tempers and resolution fairly good even at 28,000 ft.; but the simplest tasks—cooking a meal, fetching snow for melting, or taking a photograph—were found very irksome. At the highest camp (26,700 ft.) appetite was profoundly affected, and it was with difficulty that meat was eaten at all. Chocolate and biscuit were managed as a duty, and only pemmican soup and coffee were taken with any real relish, for in the high dry air liquids were the first need. The three weeks acclimatisation and the extra height seem not to have altered the colour index of the blood and the blood pressure appeared to be unaffected.

LEFT-HANDEDNESS AND LEFT-EYEDNESS.

In his "new interpretation" of left-handedness Mr. Parson sets out on an adventure which has attracted so many investigators previously that his book of 180 pages [1] contains 40 pages of bibliography, which is still incomplete. Briefly stated, his theory is that "eyedness" precedes "handedness." The "master eye" of the popular imagination determines which shall be the dominant hand, and as most people are, for some still unknown reason, right-eyed, right-handedness follows, since on account of our physical configuration we can thus aim more naturally and effectively by bringing the object, the hand, and the macula of that eye into line. The argument is attractive, and by means of a simple apparatus called a manuscope the author was able to support it in examining 608 right-eyed children, only 4 of whom proved to be left-handed. The non-agreement with the formula in one of these exceptions he attributes to a defective right eye. It was found, however, in another case, that it was the left eye that was weak. Still, the relationship at the time of examination seems to be established. It was when of 257 left-eyed children only 32 "confessed" to being left-handed, that the investigation became more complicated. This leaves 225 left-eyed dextrals to be accounted for. "Having found," Mr. Parson writes, "that of the hundreds of children examined, virtually all the right-eyed are at the same time right-handed, we are justified in believing that the natively left-eyed, irrespective of their present manual preference, were originally left-handed." But are we really justified? As there were 257 left-eyed children in a total of 877 examined, it follows that, barring accidents, 29·3 per cent. of the whole must be *natively* left-handed. Bardeleben, in 1914, attacking the problem, apparently on Mendelian principles, had come to the conclusion that the number of left-handers who changed to right-handedness was 26 per cent. of all children. This number corresponds closely with the 225 left-eyed dextrals, who were 25·7 per cent. of the total number of children examined, and so far Mr. Parson's argument finds striking support. But can we be sure that no converted left-handers should be numbered among the right-eyed dextrals? The author's attitude towards his four right-eyed sinistrals (who, he says, *claim* to be left-handed) scarcely suggests that converted left-handers amongst the right-eyed would be welcomed, if found, by the investigator. Lacking information on this, however, we can go no further. To return to the 257 left-eyed subjects, we find that Mr. Parson states that only 32 "confessed" to being left-handed. A moderate proportion of the others certainly admitted one or two left-handed activities, but nothing is said as to left-handed tendencies in a majority of the cases. According to Mr. Parson the odd activities referred to "give a hint as to what more detailed investigation of each case might have developed, had time and circumstances permitted." But the validity of his theory depends entirely upon the result of such a detailed investigation. It is suggested that training in infancy and early childhood has altered the habit of using the preferred left hand. There is no doubt that such an influence is almost invariably exercised, but, as we have pointed out, it is possible that of the 608 right-eyed dextral children many would have used the left hand apart from the same parental influence. Is it even certain that a single left-handed activity is an unfailing sign of a thwarted complete sinistrality? The author goes on to say, "the original bias may in some cases be so slight that in infancy a change might take place without the conscious exertion of any special corrective effort on the part of parents." Here two separate problems are involved: The cause for the original bias, and the origin of the elders' disapproval of a bias to the left side. The former may or may not have a physical basis, but the latter undoubtedly introduces a psychological factor. Why is the child of tender age coerced or coaxed, consciously or unconsciously, into the preferential use of the right hand? What enables it to cling tenaciously to one or more left-handed activities, when for all else it becomes right-handed? Is "eyedness" in any way responsible for the survival of any particular form of activity? It is obviously useless to ask the individual why he developed the habit of using the left hand in the first instance. He started too early for him to remember anything about it. The technique of psycho-analysis, however, may throw some light on the question. Mr. Parson's book certainly carries the problem of left-handedness to a higher plane of inquiry than do many of the previous works on the subject.

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[1] Iowa State Medical Society Journal, 1924.

[1] Left-handedness: A New Interpretation. By Beaufort Sims Parson. New York: The Macmillan Company.

ADOLPHE SMITH.

The death of Mr. Adolphe Smith at Fulham on Nov. 9th removes the picturesque figure of an octogenarian who had met life at many points. Of bilingual parentage, Mr. Smith was equally at home on either side of the Channel. He wrote an admirable guide to Hyères as a health resort, he was intimate with the small but influential community at Monaco, he was publicly thanked by the French Government for personal bravery in the streets of Paris at the time of the Commune. His deep interest in the international labour movement took him to every continental centre where standards of work were under discussion, and few can have known more of the actual conditions of life of the people of many countries. It was this background of knowledge and sympathetic outlook which gave special value to Mr. Smith's work as Special Commissioner of The Lancet for 40 years. These commissions were set in motion to inquire into various defects associated with social machinery, understood in its broadest sense, at a time when no official body existed for the purpose. Mr. Smith's reports included one on the spread of disease by means of laundrying, in which he found that table napkins from St. James's-street Club were being dried in a Peckham garret over the bed of a small-pox patient, and another on the contamination of uniforms at the Army Clothing Depôt. This report led to immediate reform. He reported on cholera centres in Europe at the danger-point of 1892–94, preparing maps and statistics which helped the progress of epidemiology; for at that time, while the State could legally spend money on investigating the few cases of cholera occurring in this country, there was no official provision for making inquiry on the continent. He reported on the sanitation of a number of continental and American cities, and his revealing survey of the Chicago stockyards was used by Mr. Upton Sinclair in his famous book, "The Jungle." Mr. Smith's investigation into the way of life of East-end tailors having resulted in the setting up of a special commission of inquiry by the House of Lords, he visited 150 sweating dens in the provinces, of which the final outcome was five large blue-books and the initiation of many changes for the better. Articles on the free feeding of school children which he wrote for us were used as evidence in the House of Commons debates which ended in a measure for provision of meals.

In all these ways Adolphe Smith's work was of lasting value to the community, but outstanding for medicine were his reports on the conditions of contract practice 30 years ago. A general movement against the medical man being dragged into contract practice as if it was a profit-making business came to a head at Cork, where the local profession formed a benefit club to be managed entirely by themselves. Mr. Smith went to Cork and set out in a brief letter to The Lancet the stages of the dispute between medical men and the clubs, the importation of outside medical help, the way in which first the hospitals and then the druggists were drawn into the battle against the demand that bankers, large tradesmen, and well-salaried clerks should be admitted to the medical clubs upon the same terms as poorer clerks, artisans, and labourers, with a miserable yearly fee to cover attendance upon every member of the subscriber's family. From Cork Mr. Smith went on to Portsmouth, where he examined the dockyard benefit societies which admitted infants and juveniles as well as adults at the uniform rate of ½*d.* per head per week; from there, to the medical aid companies at Eastbourne, and so on, over the rural and mining areas, with a divergence to Brussels and a final visit to France, where he discovered no harm being done to the dignity and interests of the medical profession by sick insurance companies. In one of these letters he summed up the position of the club medical officer as the wage-slave of a commercial concern, no longer the guardian of public health, but the promoter of a private business. These articles were issued later as a pamphlet entitled "The Battle of the Clubs," which was widely quoted when the proposals for a National Health Insurance Act first came before Parliament. It is remarkable now to recall with what approval Mr. Smith carried out his difficult task. In person he retained throughout life a certain disarming simplicity of demeanour, and his writing gave the impression of one who observed with candour and who set out his observations without prejudice. Among the host of nameless contributors to our columns none can have had wider influence on broad social conditions than Adolphe Smith.

THE PAINTER AND HIS OCCUPATIONAL RISKS.

Attention has often been directed to the occupation of painting mainly on account of risk of lead poisoning. In this and in other countries committees of inquiry have deliberated and reported. Then came the adoption at Geneva of a recommendation that lead paints should be prohibited internationally for use inside houses. Action to give force to this recommendation has not yet been followed in the different countries concerned. The contention has been advanced that some, at any rate, of the symptoms among painters attributed to lead are, in fact, due to inhaling the fumes of turpentine and other volatile solvents used in paints. There are grounds for accepting that these fumes do cause trouble, but the risk from lead poisoning is hardly thereby minimised. Now further trouble is ascribed to these same solvents by Dr. J. A. Turner, Ohio, U.S.A., whose interest was aroused by the occurrence of skin affections among painters under his care. The trouble consisted in an irritating vesicular eczema on the back of the hands and forearms, which, however, quickly reacted to treatment. He proceeded[1] to investigate the various paint substances and solvents used—namely: turpentine; naphtha; white paint composed of zinc oxide, white lead and solvents; iron filler, a mixture of carbon black, petroleum and turpentine; thinner, consisting of turpentine and naphtha in equal parts; and sealer, composed of drop black with petroleum. Guinea-pigs were used; the skin over an area was shaved, and the materials were applied for varying periods. He found that all the substances used had a depilatory effect, which, however, was soon recovered from when the application ceased. But he found, in addition, that the paint solvents can cause dermatitis, and that turpentine, thinner, and naphtha are the chief delinquents. Hence he considered that painters should be warned against using paint solvents for removing paint, grease, and oils from their hands, and be encouraged to wash in soap and water, and afterwards to rinse the skin thoroughly with clear warm water.

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[1] Acute Dermatitis Among Painters, by J. A. Turner, Journal of Industrial Hygiene, 1925, vol. vii., pp. 293–298.

THE SEVENTIETH BIRTHDAY OF A REVIEW.

A NEWSPAPER, like a country, school, or family, is mainly an abstraction of the mind. Analyse it and you will find nothing more than an office with the founder's portrait, a mortal editor, a material printing-press, a row of bound volumes, and a copy of the current issue. These, it is clear, are none of them the newspaper itself. They are only appendages to an abstract personality expressed by a name—a name which symbolises every thought or action ever associated with itself. Like children, newspapers are easily conceived, born with labour, and casually given names; it is only then that the real struggle begins. They have a very high infantile mortality; they need to be kept warm until their circulation is established; they have to be nursed through the disorders of childhood; they must be educated; and they must find a job. To live to a ripe age is in itself something of a triumph, and to have lived worthily deserves unstinted congratulation. Such thoughts are appropriate to the seventieth birthday of the *Saturday Review*, for its age is an index of the service that has been given to it and through it and inspires faith that in the future it will have as real a place in the community as it has had in the past. In a pleasing article on seventieth birthdays Mr. Gerald Gould tells the immortal story of the Frenchman who fell out of a balloon and was heard to murmur to himself in mid-air: "Pourvu que ça continue!" In an even more optimistic spirit we congratulate our contemporary.

THE next session of the General Council of Medical Education and Registration will commence at 2 P.M. on Tuesday, Nov. 24th, when the President, Sir Donald MacAlister, will take the chair and give an address. The Council will continue to sit from day to day until the termination of their business.

THE Proprietors much regret the delay in delivery of last week's issue of THE LANCET.

DONATIONS AND BEQUESTS.—Nearly £2400 have been raised by a bazaar in aid of the Ashton and Hurst Sick Nursing Association.—Mr. D. C. Edwards, for 50 years clerk to the board of guardians, has given £1000 to the Llanelly Hospital.—Miss Elizabeth Ann Vaughan, of Royston, Herts, besides other bequests, left £1000 to St. Dunstan's Hostel.—Mr. and Mrs. Lye, of Rochdale, have given a donation of £1000 to the Royal Albert Institution, Preston.—A legacy of £20,000 was made to University College, Southampton, by Mr. George Moore, of Lordswood, Southampton, once a member of the College council.—Mr. William Fletcher Rogers, Wallasey, Cheshire, besides other bequests, gave £500 each to the Chester Royal Infirmary, the Wallasey Cottage Hospital, the Victoria Central Hospital, Wallasey, the Star and Garter Hospital for Disabled Soldiers, Richmond, Surrey, and the Wolverhampton Royal Orphanage: and £250 each to Dr. Barnardo's Homes and the Agnes Weston Homes for Sailors, Portsmouth. After other bequests he left the residue of his estate for deserving charities in the City of Chester or the County of Cheshire as his two sisters may decide.

Modern Technique in Treatment.

A Series of Special Articles, contributed by invitation, on the Treatment of Medical and Surgical Conditions.

CXLVII.—THE TREATMENT OF OBESITY.

THE modern treatment of obesity is based on the subdivision of this condition into two main types, in which the exogenous and endogenous factors respectively play the chief rôle. In the exogenous, the ordinary form, there is an excess of food intake over energy expenditure in an otherwise healthy person, while in the endogenous there is a tendency to accumulate fat independently of these causes. There is usually in the latter condition an alteration of function of one or more of the ductless glands. Naturally, cases occur which must be regarded as transitional forms between the two; these types will be considered under a separate heading.

Exogenous Obesity.

Diet and exercise are the two most important points to attend to in the treatment of this form of obesity. It is possible to reduce weight by diet alone, but exercise is of great value in maintaining the tone of the muscles. It also facilitates the loss of weight by increasing the total metabolism.

Diet.—The bulk of the fat of the tissues is derived from carbohydrate, the remainder from fat. It is usual to cut down the fats to a minimum and allow a certain amount of carbohydrate in the form of vegetables. Bulk can thus be obtained in this way and the appetite satisfied. A low fluid intake is not necessary or desirable, except, perhaps, in cases with cardiac complications. Obesity can be reduced safely on a great variety of diets, so long as sufficient protein and carbohydrate are given to prevent loss of body protein. Of a number of schemes advocated from time to time, the dietetic régimes of Banting, Œrtel, Ebstein, and Von Noorden are probably the best known. In these diets the proportion of protein is increased, while the carbohydrates and fats are reduced to various extents; for details reference must be made to the original monographs. A satisfactory diet should contain a considerable amount of protein in the form of lean meat and fish, a moderate amount of carbohydrate in the form of vegetables, and little fat. Of fish, salmon, herrings, and sardines, containing more than 10 per cent. fat, should be avoided. Poultry, with the exception of duck (30 per cent. fat), may be allowed. Vegetables containing more than 10 per cent. carbohydrate should be used sparingly; the chief of these are the following: Potatoes, 16–20 per cent.; green peas, 13; broad beans, 14; broccoli, 10; onions, 10; parsnips, 18; artichokes, 17. Sugar is better cut down to a minimum and breadstuffs limited to one or two slices a day. All forms of bread contain a large proportion of carbohydrate, varying from 45–65 per cent., and the percentage in toast may be as high as 60. It should thus be condemned. Bread is a difficult article of diet to replace; the quantity must, however, be strictly limited or a patent bread made with casein (prepared for diabetics) may be substituted. Fresh fruit may be allowed in moderation. Bananas, cherries, grapes, and greengages contain more than 10 per cent. carbohydrate and should be restricted. As to cooking, the ideal form is grilling; boiling or roasting may also be employed, but frying should be avoided.

It should rarely be necessary to calculate the caloric value of the food intake. It is important that the body-weight should be controlled by weekly measurements. In most cases it is best to arrange the diet so that the weight is reduced gradually by 1 to 2 lb. a week. This prolongs the period of dieting and accustoms the patient to a small amount of food; he is less likely to overeat again.

Exercise.—The second essential in treating this form of obesity is exercise. Muscular exercise increases the metabolism more than any other factor, and the loss of weight is accelerated. Moderate exercise has been found to increase the metabolism three times, severe exercise as much as nine times its normal rate. Obese patients cannot, of course, take severe exercise without throwing an undue strain upon the heart and circulation, but active exercise can generally be arranged on a graduated scale. When the degree of obesity prevents active exercise the chief substitutes employed are massage, active and passive movement, and faradisation. Massage strengthens the muscles and facilitates the taking of active exercise, but its direct effect on metabolism is slight. Faradisation in the form of the Bergonié system has lately been used considerably; by this means the principal muscles are made to contract rhythmically and in regular order against a load. Most cases of exogenous obesity respond to diet and exercise; the use of thyroid extract is seldom necessary or advisable. Recently, attempts have been made—it is claimed with success—to treat certain of these cases by a combination of subcaloric diet and thyroid extract, but it is probable that these patients really belong to the endogenous group. They are chiefly of the type developing after childbirth and associated with menstrual disorders. The administration of thyroid extract is controlled by repeated estimations of the basal metabolic rate, which is maintained at a level of about +10 per cent. The uncontrolled employment of thyroid extract in obesity is to be condemned.

Endogenous Obesity.

In this form of obesity fat is deposited independently of food intake and energy expenditure; diet and exercise are no more than useful adjuvants to treatment by gland extracts. In endogenous obesity there is a defect of metabolism due to deficient function of certain of the ductless glands, notably the thyroid, the pituitary, and the genital glands. When their function is defective, the ability to metabolise food, and particularly carbohydrate, is subnormal. There may also be a type of endogenous obesity due to excessive secretion of insulin, and the frequency with which obese patients develop diabetes suggests that this supply may ultimately become exhausted; but this condition is not yet definitely recognised.

Differentiation between cases of the exogenous and endogenous groups is not always easy. Onset at or about puberty, or in women after childbirth or at the menopause, and associated disturbances of growth, menstruation, and other conditions suggest a ductless gland disturbance. In other patients endogenous obesity is inherited and appears shortly after birth or about the time of the second dentition. Certain metabolic investigations enable a distinction to be made between these two groups. In the endogenous form the basal metabolism and the tolerance for sugar are usually both abnormal. These tests can be made without difficulty at the bedside. The former is chiefly of value in cases of suspected thyroid deficiency, while the latter can be used to unmask a defective mechanism for dealing with sugar in endogenous cases.

Obesity of Thyroid Origin.

Obesity of thyroid origin must be suspected when a rapidly developing obesity occurs with slight symptoms of hypothyroidism, puffiness of the feet, apathy, diminution of memory, and subjective feelings of cold. The basal metabolism is usually subnormal and should be investigated. Thyroid extract acts as a specific and can be employed as a functional test. The tolerance for these extracts is remarkably high. Withdrawal of food, on the other hand, is tolerated badly. Cure by thyroid extract is rapid and complete. A reliable desiccated extract of the gland should be used and given in gradually increasing doses, starting with gr. $\frac{1}{2}$ once a day and working up to a point at which the patient loses 1 to 2 lb. a week. This rate of loss should be maintained, though as the tolerance increases it may be necessary to increase the dose still further. These patients may require as much as gr. 15 of the desiccated extract a day. The dosage can be more accurately regulated by repeated estimations of the basal metabolism, an attempt being made to maintain it at a level of about +10 per cent. Marked acceleration of the pulse or glycosuria indicates the temporary withdrawal of the extract, or diminution of the dose.

Obesity of Pituitary Origin.

The fat distribution is characteristic, being especially marked around the girdles. The degree of obesity may be excessive and is most commonly found in children and adolescents. It is usually accompanied by disturbances of growth and genital function. When the condition is due to a pituitary tumour little can be expected from treatment by gland extracts, but in other cases there appears to be only a disturbance of function. In these patients the basal metabolism is low—probably due to a secondary thyroid factor—and the carbohydrate tolerance abnormal. The literature contains numerous statements that in such cases pituitary extracts are of value when given by the mouth, the obesity being remarkably relieved in some patients. Thyroid extract is usually said to be of value, though the results are not so uniformly satisfactory as in cases of the true thyroid type. From our experience at St. Thomas's Hospital we have come to the conclusion that pituitary extracts, whole gland, anterior lobe, or posterior lobe are not effective in reducing the obesity of these patients when given by the mouth. They have, however, a definite effect on their carbohydrate metabolism, and when given with thyroid extract greatly enhance the effect of the latter. We conclude that the best results can be obtained by treatment with gradually increasing doses of thyroid extract and whole gland pituitary extract, starting with gr. $\frac{1}{2}$ of each and working up to a point at which the patient loses 1 to 2 lb. a week. Some cases may require as much as gr. 15 of each extract a day. More accurate regulation of the dosage can be obtained by repeated estimations of the sugar tolerance. Reliable desiccated preparations should be used.

Obesity of Genital Origin.

The tendency to obesity, observable in both sexes after castration, is generally attributed to the loss of the secretion of the genital glands. That treatment by extracts of these glands has not up to the present proved effective may be due to lack of effective preparations. The same may be said of the treatment of eunuchoid obesity. It is possible that genital grafts may ultimately prove to be the solution of these problems. Some of these patients can undoubtedly be helped by dietetic measures, others by thyroid extract. As their basal metabolism is sometimes low and carbohydrate mechanism usually defective, the latter is probably the best method of treatment at present available.

Transition Forms.

A number of cases of obesity develop at times when the function of the ductless glands is known to be disturbed; for instance, in women after childbirth or at the menopause, or after some infectious illness. They are not usually regarded as cases of endogenous obesity, but due rather to the sedentary habits and overfeeding of convalescence. In other persons, under exactly similar circumstances, obesity does not result, so that presumably there must be some additional factor. The mechanism of these persons for dealing with sugar corresponds to that of the endogenous type, the curves being nearly always abnormal. Again, treatment by diet and exercise is frequently ineffective in reducing their obesity, while good results can be obtained from treatment with thyroid and whole gland pituitary extracts. It would appear advisable to take all these points into consideration when dealing with any individual case of obesity.

H. GARDINER-HILL,
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Special Articles.

CANCER STATISTICS.

By J. E. Rush, M.D.,
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It must be apparent that vital statistics, their collection and interpretation presupposes a dual type of training. Biometrics (of which vital statistics is a part) is simply mathematics applied to a biological problem. The mathematics involved is far the simpler consideration, for in order to have the deductions of any value whatsoever, the student must have a clear-cut conception of all the underlying biological factors which influence the collection of the data with which he is working. Obviously, one is not entitled to use a precision measure indicating that the result is correct to 1 part in 100, if in the collection of one single factor there is a probable error of 10 per cent.

Mathematics applied to a Biological Problem.

The handling of figures as applied to vital statistics is relatively easy from a mathematical standpoint, while from the medical standpoint it is fraught with extreme difficulty. To add, to multiply, or divide, to figure rates per 100,000 is nothing but simple arithmetic. To know the limitations of differential diagnosis, the difficulties in the interpretation of physical signs and laboratory data, to have made out death certificates where you could not be absolutely sure, even of the primary cause of death, are all necessary experiences before one is at liberty to interpret vital statistics. Here, perhaps more than anywhere else, does the maxim "Figures don't lie," &c., find its best application.

How does this apply to cancer? There is a group of statisticians that contend that the incidence of cancer is actually increasing; others say that the increase is only apparent and not real, that it is due to better diagnosis, to better reporting of the causes of death, &c. It is certainly important for us to know the truth because science is dependent upon truths, and, furthermore, such knowledge may influence our methods of attack on the problem.

In order to arrive at a basis for the comparison above indicated, it is obviously best to select census years which are sufficiently separated to show any changes (if, indeed, such changes exist) so that we are not forced to draw conclusions from slight differences in data, from which deductions of the kind to be made are not warranted, simply because the slight differences shown are not significant in view of the precision of the biological data subjected to analysis. For many reasons it is thought that a recent ten-year period could best serve our purpose, and for this reason the years 1910 and 1920 have been selected. The intervening census years have been examined in order to be sure that the years selected were representative and that no particular factor, not usually operating, was met in the two years cited.

In the interpretation of vital statistics based on mortality rather than morbidity many seem to feel that there is a great element of precision which allows the manipulation of such data in a purely mathematical manner, and that deductions stated with great mathematical accuracy are warranted. Whatever may obtain elsewhere, this certainly is not true in cancer. It is not necessary to point out to the physician that neither tumour nor cachexia nor both occurring in the same individual are pathognomonic of cancer. One or both of these conditions are frequently met in the anæmias, in arterio-sclerosis and the like, and until we have a different attitude on the part of the public toward post-mortem examinations, these great factors will always influence our vital statistics, even our mortality reports. We must, too, be very careful of false correlation. Only recently it has been stated that the cancer curve has paralleled the increased use of machinery; but to prove that these bear a cause and effect relationship to each other is quite another matter.

Analysis of Reported Increase.

From 1910 to 1920 there is a reported rate increase in the incidence of cancer from 76·2 to 83·4 per 100,000, or over 9 per cent. (1) What are the important differences in the U.S. registration area of 1910 and 1920? (2) What factors or appliances have entered the field of medicine to help in making a better diagnosis of cancer? (3) To what extent has the saving of lives in the lower age-groups increased cancer as one of the causes of death in the upper age-groups?

Let us analyse the statistics of these three years before we answer (see table).

Cancer (including Sarcoma and Hypernephroma).

—	1910.			1915.			1920.		
	Total deaths.	Per cent. of total.	Rate per 100,000.	Total deaths.	Per cent. of total.	Rate per 100,000.	Total deaths.	Per cent. of total.	Rate per 100,000.
Buccal cavity	1,576	3·8	2·9	2,123	3·9	3·2	2,679	3·7	3·1
Stomach and liver. ..	16,475	40·1	30·6	21,221	38·9	31·5	27,489	37·7	31·4
Peritoneum, intestines, and rectum	5,258	12·8	9·8	7,332	13·4	10·9	9,792	13·4	11·2
Female genital organs..	6,147	15·0	11·4	8,120	14·9	12·1	10,797	14·8	12·3
Breast	3,730	9·1	6·9	5,163	9·5	7·7	6,665	9·1	7·6
Skin	1,459	3·6	2·7	1,955	3·6	2·9	2,367	3·2	2·7
Not specified	6,394	15·6	11·9	8,670	15·9	12·9	13,142	18·0	15·0
Total	41,039	100·00	76·2	54,584	100·00	81·2	72,931	100·0	85·4

The precision of the data is not such as to warrant us in using the number of significant figures shown in the column entitled "Per cent. of total deaths." The mathematics have been extended in order to make more apparent the differences (should any such exist).

The rate per 100,000 has increased from 1910 to 1920. In 1917 and 1918 much comment was provoked by the apparent arresting of the upward trend of the cancer curve and many explanations were advanced to account for it, such as: 1. The educational programme intended to reach the public with the message that early cancer is curable has begun to bear fruit. Subsequent statistics have proved the incorrectness of this theory. 2. Another most interesting theory was that the war-time diet of the country had influenced the cancer-rate. Diet (on the calorie basis) is terribly over-emphasised as a factor in public health problems, and again we must recall that there was really no very great national change in our modes of living (including diet) during the war. While not attempting to answer the question raised by the statistics of 1917 and 1918, we must remember that the flower of the medical profession was abroad or in camps on this side; that, to take their places many graduates who had never before practised medicine and many retired physicians were pressed into service to meet the public needs. I have no doubt that this accounted for the difference in our vital statistics. 3. That the influenza pandemic took its greatest toll in the age-groups in which cancer is not particularly met is, I believe, an established fact. Many have claimed that the decrease of deaths due to 'owered infant mortality, the reduction in typhoid fever, tuberculosis, and the like gives an increased incidence in those diseases of the upper age-groups, of which cancer is one. When we recall that effective work of this kind has only been in operation for 10 or 15 years, it is difficult to imagine that the child hygiene and typhoid fever (a disease usually of adolescence) prevention programmes would have yet brought great numbers of individuals into the age-groups where cancer takes it greatest toll.

Perhaps there is some reason to consider tuberculosis alone—this disease has caused (and is causing) so great a mortality—too, we must recall here that the effective work in preventing tuberculosis has apparently decreased the mortality from this dread disease nearly 50 per cent. This is a factor worthy of some consideration, but it may be stated here that the average (and it is very dangerous to deal with averages) age of death as computed from the 1920 mortality statistics is about 35 for tuberculosis, while the same for cancer is over 55 years.

Let us examine the tables above given for cancer mortality in the years 1910, 1915, and 1920. We note that there has been a great increase in the total deaths from cancer and also in the deaths from cancer in the various locations of the body. Undoubtedly most, if not all, of this increase is due to the addition of Minnesota, Montana, and Utah (1910), Kentucky and Missouri (1911), Virginia (1913), Kansas (1914), North Carolina and South Carolina (1916), Tennessee (1917), Illinois, Louisiana, and Oregon (1918), Delaware, Florida, and Wisconsin (1919), and Nebraska (1920), to the registration area of the U.S. as it existed in 1910. The group recorded as "not specified" amounts to from 15 to 18 per cent., unfortunately. This must be interpreted as representing a probable error in the statistics of cancer as reported by location of nearly this magnitude.

There is no one who would claim that our ability to diagnose cancer of the buccal cavity, breast, or skin (which caused the death of the patient) was much better in 1920 than in 1910, but it might be thought that the development of the X ray (particularly if it had been more widely used) might have shown an increased incidence in cancer of the stomach, peritoneum, intestines, &c. No such increase is apparent from an examination of the distribution of cancer in various anatomical locations in 1910, 1915, and 1920. Besides the increase in the total deaths from cancer in the various years shown, there is also quite a definite increase in the rate per 100,000. However, quite a percentage of this increase is found under the head of "not specified," which is, without question, the least reliable of any of the figures above given.

Conclusions.

Some of the statements made above are further strengthened by a report entitled "Mortality from Cancer," &c., prepared in 1914 by the U.S. Bureau of Census, which is a special study of the incidence of the disease. This is the most careful statistical study of cancer in the U.S. which has ever been made. The following facts are gleaned from the report cited. About 2000 death certificates from an estimated 50,000 deaths from cancer were examined, and it was found that in only 2 per cent. of the cases was the diagnosis confirmed by autopsy and in only another 9 per cent. had an operation confirmed the clinical diagnosis.

On the basis of the returns for 1913 it was assumed that about 8500 deaths would be reported as due to cancer of buccal cavity, skin, and breast, "all so situated that no mistake would be probable in diagnosis, and that these, therefore, could be classified as of reasonably certain malignancy." This would mean that in 14,000 cases the diagnosis was "reasonably certain," leaving 36,000 cases in which it was proposed to write to physicians for additional information. About 35,000 letters were sent to physicians and replies received in about 80 per cent. of the cases, with the result that the Bureau was able to compile 30,555 deaths, or 58·3 per cent. of the total appeared under the caption of "Diagnosis reasonably certain," 27·5 per cent. under "Diagnosis uncertain," and 14·2 per cent. under "Diagnosis unknown." With this lack of accurate and definite information in the best cancer study that has ever been undertaken in the United States, are we justified in assuming that a recorded increased change in the death-rate from 76·2 per 100,000 in 1910 to 83·4 in 1920 is indicative of an increased incidence in cancer? With a definite admitted lack of precision of 14·2 per cent. and a possible error of 41·7 per cent. in the collection of the statistics, are we justified in attaching any importance to a change in the end-result of the magnitude of less than 10 per cent.?

Obviously we have not statistics of sufficient accuracy at hand to be certain that cancer is increasing, and the burden of the proof that it is must rest with those who claim that such is the case.

MATERNAL MORTALITY.

A CONFERENCE arranged by the Post-Certificate School was held at the house of the Royal Society of Arts on Nov. 9th to discuss

How the Midwife can Help to Reduce Maternal and Infantile Mortality.

Dr. J. S. Fairbairn, who opened the discussion emphasised the importance of making the services of the doctor and of the midwife complementary and not rival. In his opinion the normal labour should be conducted throughout by the midwife; the practitioner should supervise the pregnancy, give antenatal care and instruction, and be ready to deal with any abnormality beyond the scope of the midwife's training. The Scottish Board of Health had remarked in a recent report that the doctor was too expensive and highly trained an instrument to use for normal labour. If this was to become the rule it was most important to get the best possible people into the midwifery service. There were not nearly enough fully trained nurses practising midwifery, and it was essential in the interests of public health to devise some means whereby the best class would be attracted. He thought that the practice of midwifery should be made a stepping-stone to public health appointments and the conditions of the midwife made less burdensome. This was the day of team work, and team work between midwives and general practitioners would add greatly to the public health services of both.

Miss Doubleday drew attention to two outstanding statistical facts; that since the passing of the Midwives Act there had been practically no change either in the maternal mortality-rate or in the infant mortality during the first month after birth. She pointed out that 50 per cent. of the births in this country are attended solely by midwives. The reduction of these mortality figures was largely a problem of housing, and she questioned whether the provision of more hospital accommodation were the best solution for normal cases. The routine of the well-equipped hospital did not help the woman when she returned to her own conditions. The midwife in attendance at the home could educate her and show her how to make the best use of those conditions. A very important factor in this education was the father, who was entirely neglected under the hospital system. Educational authorities had been inclined in the past to leave the father in the dark and had not attempted to teach him that his help was really needed. The midwife's work was essentially to advise and supervise. She should insist on her patient going to the doctor at the third and eighth months, and see her at regular intervals throughout the pregnancy and test her urine. Prematurity was one of the main factors in the high mortality-rate. Moreover, there were many minor ailments such as constipation, varicose veins, fatigue, lax abdominal walls, &c., on which helpful advice could be given, and many parturition troubles could be avoided if every mother were protected from over-fatigue in the first stage of labour. In the puerperium the "handy woman" was a potential danger; she had no idea of the elements of asepsis nor of how to treat any difficulty that arose. It was no use to expect a reduction in the maternal or infantile mortality until skilled nursing of the puerperium could be provided. Often the infant was taken off the breast during these early days for want of sensible advice. To sum up, the contribution of the midwife to the problem was: Observation and education during pregnancy, immediate recognition of any abnormality during labour, and skilled nursing during the puerperium.

The Problems in Rural Areas.

Dr. F. E. Fremantle spoke of the problem in rural areas. The days of the uneducated midwife, he said, were now over, yet some of the least educated midwives had got the best results by the exercise of homely common-sense. He warned the audience not to apply town ideas to country districts. Life in a village was simpler in many ways, and it was necessary to consider the community as a whole. There the doctor reigned supreme, and rightly so, deputing as much responsibility as he possibly could. The essentials of public health lay in the individual. The individual woman had it very largely in her own hands to prevent the disasters of her confinements. While the doctor might be the commanding officer in the campaign for the new life, the sergeant-major was undoubtedly the mother. Therefore, the first essential was to educate mothers, and at no time were they so receptive as during and especially just after their first pregnancy. Moreover, the girls should be taught from schooldays what their maternal function meant and the outlines of its hygiene treatment. To make rural midwifery attractive to suitable women the only satisfactory scheme would be to combine the services of district nursing, including tuberculosis nursing and care of the blind, with midwifery, school nursing, and health visiting. There was a definite future to offer to such women provided the public saw to it that the terms of service were adequate. Permanent quarters ought to be maintained for the nurse in the village. It was just as essential for the village to have a nurse as a parson, and as in the past it had been a public duty to endow the living of the parson so in modern times might the home, if not the salary, of the village nurse be endowed.

The Urban Problem.

Sir John Robertson contributed a paper dealing with large centres, which was read by the chairman. He pointed out how different the situation was in towns, where the midwife could get help in a few minutes and could attend lectures and other forms of instruction; where she could earn more in her more compact practice and pick her patients. He doubted, however, whether the position were really better, although undoubtedly easier and more attractive. There was much value in being thrown back on one's own resources. He urged the recognition of strict etiquette between doctors and midwives. The midwives were fighting the question of unqualified practitioners and ought to be supported by law, but unfortunately a great proportion of their work was done by doctors assisted by "handy women." The midwives ought to be able to send their patients into homes where they could attend them; at present a patient sent into a home was lost to the midwife.

Miss Liddiard, matron of the School of Mothercraft, said that the best educated woman was not doing midwifery because the remuneration was not safe. Country dwellers were often difficult to teach; often the midwife was the only person who could give real education. She believed confinement in the home to be the right thing. Labour was a natural process; why should it be made unnatural by taking the woman away from her husband and family? Moreover, the woman confined in hospital returned without having learned how to manage her baby in home conditions.

Miss Rosalind Paget said that the maternal mortality in 1924 was 1·5 per 1000 in rural areas and under properly-trained and supervised midwives. The women died; we did not know why they died, and that was what we had to find out. There should be post-mortem examinations on every fatal puerperal case. Often the post-mortem findings were clear enough, but were quite different from the diagnosis reached before death. The midwife could help by educating public opinion on the importance of autopsies. The examinations should be performed by competent obstetricians, preferably an official for the district. She also urged a uniform system of birth notification with a space to show clearly who it was that actually delivered the child.

Miss Olive Haydon said that the nursing of the puerperium had been neglected in the enthusiasm for ante-natal care. There were still registered midwives who were incapable of taking pulse or temperature. The mortality-rate could be reduced by careful adherence to the rules of the Central Midwives Board. Post-certificate education should be compulsory, and a longer period of training would help to raise the standard of teaching. More preventive measures should be taught.

Dr. Eustace Hill said that coöperation between the doctor and the midwife was difficult to achieve. Until recently only 19 per cent. of the cases in his district were attended by midwives, but the figure was now increased to over 35 per cent. One of the difficulties in the midwives' service was the opposition of the general practitioner. In one mining district where the public health authority had tried to establish a midwife the doctors had said frankly that they would do their best to starve her out. The two chief causes of maternal mortality were ignorance and the indiscriminate use of forceps. The general practitioner must be educated and also the individual patient on the importance of ante-natal care and the hygiene of labour and the puerperium. Another difficulty in the way of the midwife was that the fee for a doctor called in by a midwife was collected partly or wholly from the patient and might total three guineas, whereas for one guinea the doctor could be retained without a midwife. The patient should not be responsible for fees due to a doctor called in by the midwife. The number of a midwife's cases should be limited; midwives who delivered 300 patients in a year obviously did not do their work properly.

Miss Elsie Hall, speaking as a practising midwife in a poor area of London, said that the midwife had a unique opportunity to encourage husbands to come for an educational talk when she was first booked. She urged that boys and girls should be taught physiology in their schooldays.

Dr. Annie McCall urged the importance of post-mortem examinations. The mortality was high in the general practitioner's work, but much lower in hospitals and in the work of midwives. Doctors had often been sent for too early by midwives because midwives were not taught to do their internal examinations properly. This meant early and unnecessary forceps. She urged the necessity of allowing midwives to give sedative drugs to ensure an easy first stage. She had never seen any harm result from the use of chloral.

Dr. Harold Scurfield said that there was much talk about ante-natal work, but as a matter of fact very little was going on in the country at present. Women would not yet go for ante-natal advice, and must be educated by midwives on its necessity. But the doctor to whom they were sent must not be just any doctor, but a skilled obstetrician, and panels of obstetricians should be compiled. In America the experiment had been tried of putting all the midwifery of a district into the hands of the midwives, backed up by obstetricians. The mortality-rate fell at once. In Australia, where more confinements were conducted by midwives than in any other country, there were fewest maternal deaths. Most of the high maternal mortality was due to meddlesome midwifery.

Dr. R. E. McKenzie said that in Woolwich there was very good coöperation between midwives and the public health authorities. The midwives sent their cases to the ante-natal centres for advice. The trouble about ante-natal work was that there were no fees for it. Midwives had told her that the L.C.C.'s plan of paying the fee of a doctor called in by a midwife had made matters worse, because before that rule the doctor would come and do what was needed for a very small fee, but now the authority fixed a fee and extracted a part of it from the patient, who never knew what she would have to pay.

Sir Francis Champneys agreed that home was the best place for a normal labour. The woman's home ought to be one that she could be confined in, and that was the ideal to work for. To deny sedatives was inhuman. Opium was an excellent drug and appeared to act as a stimulant or as a sedative, according to the needs of the patient.

PARIS.

(FROM OUR OWN CORRESPONDENT.)

Public Health and Political Stability.

THE overthrow of ministries has its bearing on public health achievement. Here in France technical instruction in public health and popular hygiene is unquestionably good, but its general application throughout the country is poor, as is indeed frankly admitted. Ministerial changes may lie at the root of this failure. Any national accomplishment in public health depends upon the insistent promotion of a definite programme. In England and America the public health programme is only slightly affected by political change. In France the centralised governmental organisation has been unable to continue work along any programme on account of frequent reshuffling in the politico-social system. Leadership in the French public health services has been changed six times during the period 1914–1925. The longest time during which any chief has enjoyed office has been one year and a half; one remained but five months. Anyone familiar with the prolonged period necessary for raising the public health standard of a community will appreciate the effect on a really good public health programme of such frequent political change. As things are these programmes have a hard enough time at the hands of interested politicians.

Small-pox in France.

Vague reports of virulent outbreaks of small-pox in this country seem to have made British visitors thoughtful about choosing their autumn tour, and the British Embassy in Paris is said to have inquired in what departments of France tourists may travel freely without risks of infection. In reply it has been stated semi-officially that measures against small-pox are perhaps more effective in France than in any country. Free vaccination is practised in all the hospitals. Vaccination is compulsory in early childhood, among school children, in the army and navy, in hospitals and asylums, and a provision exists for making vaccination and revaccination obligatory in face of epidemic risk. Prompt application of isolation and vaccination has been found to control such recent outbreaks as that of 29 cases occurring at Toulouse, and that of 23 cases in the Hérault département. Four-fifths of the cases occurred in women who had not been revaccinated since childhood, and the mortality was 33 per cent.

The Bergonié Foundation.

The friends of the late Prof. Bergonié are collecting a memorial fund to be used in establishing a laboratory for electrical and radiological research and experiment. If the funds collected suffice, allowances for specially qualified investigators will be provided, in order that studies of this kind may be encouraged. It is also intended to supply modest pensions for workers disabled by work in electricity, or involving radium and X rays. Those desiring to contribute to this fund should communicate with the Fondation Bergonié, 5 rue Saint Philippe du Roule, Paris.

Awards in Medicine by the Académie des Sciences.

Notable awards in the medical and other sciences were made by the Académie des Sciences of the Institut de France, at its meetings of Oct. 26th and Nov. 3rd. Among the more important were the following: 5000 francs to Gaston Ramon, for work on anatoxins, especially the diphtheric anatoxin; 2500 francs each to Eugene Wollmann, for work on proteolysis and the defence ferments of Abderhalden; to Maurice Javillier (biological chemistry), to Léon Bérard and Charles Dunet, of Lyons (thyroid cancer), and to the group consisting of Sergent, Donatien, Parrot, Lestoquard, Plantureux and Rougebief (the bovine piroplasmoses of Algeria). Awards of 2000, 1500, 1000 francs and less were made to Mercier, Savigny, Rosenthal, Métalnikov, and others for their contributions to anatomy, zoology, blood transfusion, intracellular and protozoan activity.

Reduction of Infant Mortality.

Infant feeding centres are increasing in France. Their work includes supervision of artificially fed infants, together with regular examinations and effective utilisation of wet nurses. In 1922 and 1923 the movement was initiated by private agencies operating at six points outside Paris. Results were so satisfactory that the Assistance Publique has instituted centres at Montluçon, Moulins, Nevers, Toucy, and La Châtre; these care for a total of 280 infants. A private centre at Mainville has also been transferred to the Assistance Publique. For the private centres, a mortality of 16·7 per cent. in 1924 was lowered to 12·7 per cent. in 1925. For the official centres at Paris over the same period the diminution was from 12·3 per cent. to 11·3 per cent. A buffet providing sterile milk for infants, recently established in the railway station at Limoges, has proved so useful that similar buffets will be instituted at Nantes, Tours, St. Pierre-des-Corps, Montluçon, Périgueux, Vierzon, and Les Aubrais. These milk buffets are operated by the railway company of the Paris-Orléans region.

The Parents' Association of the Deaf-Mutes Institution in Paris has presented a vigorous protest against its projected removal to some provincial site. The protest will be considered by the Paris Municipal Council.

A new clinic for mental and neurological hygiene, sponsored especially by Profs. Claude and Nobécourt, and mainly devoted to children and adolescents, has just been established in the rue Vaugirard, not far from the Montparnasse railway station. The clinic provides examination, treatment, hospitalisation, and other aid which may be necessary, and will also be utilised for the instruction of medical students.

At a recent meeting of the Academy, Prof. Achard, on the completion of his five years' period as general secretary of the Académie de Médecine, was unanimously re-elected for another term of five years.

UNITED STATES OF AMERICA.

(FROM AN OCCASIONAL CORRESPONDENT.)

The Council of Physical Therapy.

AT the recent Atlantic City meeting of the American Medical Association the trustees of the Association were empowered to set up a council to investigate and report on the merits of non-medicinal apparatus and contrivances offered for sale to physicians or hospitals. No time was lost, and a council, constituted on the lines of the Council of Pharmacy and Chemistry, has just met at Chicago. This council consists of two physicists, two physiologists, two pathologists, and four clinicians, whose names carry weight both at home and abroad. The council which, as yet, has simply discussed the scope of its work, intends not only to investigate physical apparatus, but to inquire into methods of massage, manipulation, hydrotherapy, and remedial exercises, and in the first instance a statement will be prepared of the present status of the various physical therapeutic methods now in use. American practitioners are hopeful of obtaining, through the advice of the council, value for their money.

Diphtheria Prevention.

Until recently the prophylactic use of diphtheria toxin-antitoxin has been almost limited to children of school age. These are naturally the most accessible to the health authorities and can be treated economically by routine methods. Parents in the U.S.A. are accustomed to having vaccination enforced at the school age and an additional measure of prevention comes naturally at this time. In New York City, where the largest numbers of school-children have been treated, there has been a definite fall in the mortality from diphtheria, and though it is hard to say how much this fall is directly due to the use of toxin-antitoxin, the authorities claim that the practice has saved the lives of 700 children since 1914. Considering, however, that more than half the deaths from diphtheria occur before school age is reached and that early diagnosis is most difficult in the pre-school years, it has seemed scarcely adequate to protect only the school-children. Where clinics are held regularly for pre-school children an obvious opportunity exists. Baltimore has had such clinics for several years and has lately taken advantage of them to make toxin-antitoxin immunisation available. As the result of publicity, no doubt, it has now been found necessary to open 12 new stations, and the attendance at these has been most gratifying, from 50 to 100 babies being reported as a weekly average from several of the new stations. At Syracuse, N.Y., where the Milbank Foundation is financing a health demonstration, special clinics are being held for the same purpose, and several pamphlets have been published for popular enlightenment. Copies of them can be obtained from the Syracuse Department of Health, 314, East Fayette-street, Syracuse, N.Y.

Increasing Virulence of Small-pox.

For cities in the United States and Canada in 1924 and 1923 the fatality-rates of small-pox were 1·5 per cent. and less than 1 per cent. respectively; but in the first six months of this year the figure has risen to 3·5 per cent. The fatality-rate for States and provinces (including the rural areas) has reached 2·1 per cent., which is three times that for 1923. The highest rate was in Camden, New Jersey, which reports 97 cases with 44 deaths. The statistical bulletin of the Metropolitan Life Insurance Co., in reporting these figures, predicts that "only thoroughgoing vaccination will protect the American and Canadian populations from an epidemic of deadly small-pox which, under present conditions of indifference to vaccination, bids fair to rival the most destructive small-pox epidemics in public history."

A Scheme of Neurological Convalescence.

The Public Health Committee of the New York Academy of Medicine has been considering the care of various types of convalescent patient. The subcommittee concerned with nervous cases point out that very few neurological cases run a clear-cut course ending in cure, and that the line of demarcation between the subacute and chronic is ill-defined. It is therefore impossible to confine any scheme strictly to convalescence and their proposals include all neurological cases save the really acute. The plan they put forward suggests that there should be four types of home. The first is the general convalescent home as it already exists, in which might be received cases such as peripheral neuritis, mild poliomyelitis, and surgical operations on the brain and cord. A variant of this would be a home more especially adapted to the neurological patient where a resident physician and nurses with some special training would deal with a small number of organic neurological cases and a few functional ones, included with a larger number of ordinary medical and surgical patients. The second type of house would be a new organisation specially run for neurological convalescents, such as choreas, early amyotrophies, neuritis and post-encephalitic cases, residual vascular cases, mild endocrinopathies, and early but already treated neurosyphilitics. A minority of general medical cases would be included in the home in order to improve the morale. Emphasis would be laid on recreations, games, and occupational therapy with a minimum of medicine. The third large type is the neurological convalescent farm, to which is attached a staff of specially trained nurses under a resident physician. This would accommodate exclusively functional cases, and emphasis would be laid on practical occupation, household, gardening, and farm work. Separate establishments should be reserved for behaviour children, including post-encephalitics. The fourth type is the hospital for chronic cases, working in conjunction with the convalescent system. The majority of the patients would require only custodial care, but a few would be admitted for medical study and diagnosis in order to improve the atmosphere of the institution. Stress would be laid on medicinal treatment and physiotherapy and recreations should be supplemented by occupation therapy. The only place for the epileptic would be in a special neurological convalescent home or a chronic hospital reserved for this type of case. The report of the subcommittee concludes with the statement that 5900 prospective patients per annum would probably benefit by the coördination in New York of convalescent homes on the lines indicated.

Obituary.

FREDERICK ST. GEORGE MIVART,

M.D. LOUVAIN, F.R.C.S. EDIN.

Dr. F. St. George Mivart, formerly medical officer of the Ministry of Health, died suddenly at his London residence on Nov. 5th at the age of 70. A son of Dr. St. George Mivart, F.R.S., who was a zoologist of more than European reputation, he was educated at Beaumont and the Catholic College of Higher Studies, Kensington. He received his medical training at St. Mary's Hospital, London, and at the Royal Infirmary, Edinburgh, qualifying in 1881 as M.R.C.S. Eng. and L.R.C.P. Edin. Three years later he was admitted to the Fellowship of the Royal College of Surgeons of Edinburgh, and after study in Paris, Vienna, and Louvain he gained, in 1889, the M.D. Louvain. After holding in London the successive posts of house surgeon to the Male Lock Hospital and surgeon to the City Dispensary and Western General Dispensary, he was appointed as medical officer to the Local Government Board, and subsequently to the Ministry of Health.

A colleague in the Ministry of Health sends the following appreciation: "Yet another gap has been made in the already small number who remain of the medical inspectors appointed to the Local Government Board in the last decade of the nineteenth century. Mivart joined the staff when he was about 42, and brought to the work a fine and matured intellect, ripened by experience at home and abroad, and among the great men whose colleague he became Mivart soon made his own distinctive impression. He was not a 'specialist,' as was Parsons, on the then somewhat unsettled isolation hospital question or as Power on epidemiology, or as Copeman in scientific research, but no one was more fit to maintain the dignity of the Government Office to which he belonged than Mivart; none knew better than he how to 'admonish' the neglectful official, not by bludgeoning, but in the manner of expert fencer. Mivart ever expressed his accurate observations and thoughtful deductions in careful and felicitous English, and many articles from his pen were printed in the series of reports by medical officers of the Local Government Board on public health subjects. The matter of several of Mivart's reports was so striking as to be given wide publicity in the lay press. To the end of his life Mivart kept up a practical interest in public health work, for, since his retirement some six years ago, he had been a councillor of the Royal Borough of Kensington and a Poor-law guardian. Quite recently he spoke of revisiting with myself the scene of one of his early labours, in order to find out for himself what progress had been made in impounding as a public water-supply certain plentiful springs to which his attention had been drawn years before. Like many another project this was never fulfilled. After passing more than the Psalmist's span of life, he has gone to his rest while still in harness, leaving children, a grandchild, and a great-grandchild to mourn his loss with his widow."

He married, in 1877, Marie Sofie, daughter of Mr. D. Maurigny, of Nice, France, and to her we express our sympathy.

WILLIAM EDWARD NICHOLLS DUNN,

M.B. LOND., M.R.C.S. ENG.

Dr. Nicholls Dunn, who died at Mentone on Oct. 9th after a long illness, was born at Usk, Monmouthshire, in 1871. He was educated at Monmouth Grammar School where he excelled at both cricket and football. He went to St. Bartholomew's Hospital in 1889, took his medical qualification in 1895, and then held resident appointments at the Metropolitan and Queen Charlotte's Lying-in Hospitals, serving also as house physician and resident anæsthetist at St. Bartholomew's. During the South African War he served as civil surgeon to H.M. Hospital Ship *Nubia*, and at the end of the war, owing to indifferent health, he began to winter in Egypt, where he became well known, first as medical officer in Messrs. Thos. Cook and Son's Nile Service and later as resident in Luxor. Here he did good work amongst the visitors and gave much time to the Luxor Hospital for Natives. Shortly after the Great War broke out Dunn volunteered and entered the R.A.M.C., in which he worked devotedly from 1915–19 at Netley Hospital and the Horton Hospital at Epsom. It was this work and the worry and anxiety attached to it, his friends think, that was responsible for the lighting up of the chest trouble which had threatened him for nearly 30 years. He again wintered in Egypt, 1920–22, but was never the same man as before.

"Bill Dunn," writes one of his friends, "was always a favourite with his fellow students and resident officers, but it was in Luxor that I learned to know him well. He was a first-rate practitioner and good anæsthetist. He had his ideals, was a staunch, kind friend, and a very faithful colleague. He was very jealous of the good name of the profession and very plain-spoken about anything he considered unworthy or not altogether straight and upright. In spite of the ill-health which dogged his footsteps, he made a name at Luxor amongst his patients, both British and American. With the natives of Egypt he was a favourite. In whatever sphere he worked he would have made his mark. His numerous friends will much regret his loss."

INFECTIOUS DISEASE IN ENGLAND AND WALES DURING THE WEEK ENDED OCT. 31ST, 1925.

Notifications.—The following cases of infectious disease were notified during the week:—Small-pox, 98 (including 14 new cases at Sheffield, 16 at Sutton-in-Ashfield, Notts, and 25 at Blagdon, Durham); scarlet fever, 2588; diphtheria, 1177; enteric fever, 87; pneumonia, 1100; puerperal fever, 44; cerebro-spinal fever, 7; acute poliomyelitis, 13; acute polio-encephalitis, 1; encephalitis lethargica, 52; dysentery, 1; ophthalmia neonatorum, 110. There were no cases of cholera, plague, or typhus notified during the week.

Deaths.—In the aggregate of great towns, including London, there were 5 deaths from enteric fever, 30 from measles, 8 from scarlet fever, 12 from whooping-cough, 31 from diphtheria, and 54 from influenza. In London itself there were 7 deaths from diphtheria, 13 from influenza, and 24 deaths of infants under two years of age from diarrhœa and enteritis.

The Services.

ROYAL NAVAL MEDICAL SERVICE.

C. W. Keates to *Cambrian*.

Surg. Lt. (R.N.V.R.) L. P. Spero has been entered as Surg. Lt. and has been appointed to the R.N. Hospital, Haslar, for course.

ROYAL ARMY MEDICAL CORPS.

Lt.-Col. B. A. Craig retires on ret. pay.

Capt. J. E. Measham retires, receiving a gratuity.

R. J. G. Hyde to be temp. Lt.

TERRITORIAL ARMY.

Maj. W. H. Broad, having attained the age limit, is retd. and retains his rank with permission to wear the prescribed uniform.

Capt. F. B. Julian resigns his commn. and retains his rank.

Lt. W. R. S. Watkins to be Capt.

Lt. V. S. Mitcheson (late R.A., T.A.) to be Lt.

General List (Supernumerary): Capt. F. Hauxwell to be Maj.

Capt. F. C. Chandler, R.A.M.C., to be Divisional Adjutant, 51st (Highland) Divisional T.A., vice Capt. T. L. Fraser, R.A.M.C., who vacates that appt.

TERRITORIAL ARMY RESERVE OF OFFICERS.

Lt.-Col. (Bt.-Col.) G. C. E. Simpson, from Active List, to be Lt.-Col. (Bt.-Col.).

TERRITORIAL DECORATION.

The King has conferred the Territorial Decoration upon the undermentioned officers: Lt.-Cols. C. H. S. Redmond and E. B. Bird, and Majs. C. Corfield, W. J. Harrison, and A. F. Lee.

INDIAN MEDICAL SERVICE.

The King has approved the retirement of Lt.-Col. F. S. C. Thompson.

The King has also approved the relinquishment of their temporary commissions by Capts. Nur Ahmed Quraishi and Chuni Lal Khanna.

Maj. J. W. Jones has been appointed Civil Surgeon, Maymyo. Dr. F. Reynolds officiates as Civil Surgeon, Ruby Mines District. Lt.-Col. J. E. Clements has been appointed Inspector-General of Prisons, United Provinces, vice Lt.-Col. J. M. Woolley, retired. Lt.-Col. M. R. C. MacWatters, civil surgeon, Meerut, has been appointed to the civil medical charge of the Saharanpur District, vice Maj. A. Seddon, reverted to military duty. Lt.-Col. Herbert Hallilay, late civil surgeon, Murree, has been appointed to act as Civil Surgeon, Simla (West), vice Lt.-Col. W. W. Jeudwine. Capt. S. N. Hayes has been posted to Dalhousie as Civil Surgeon in relief of Capt. G. E. L. Simons. Lt.-Col. W. J. Powell, Inspector-General of Prisons, Central Provinces, has been appointed Civil Surgeon, Pachmarhi. Col. P. Dee, hon. surg. to the King, the senior I.M.S. colonel on the active list, has retired and has been succeeded by Col. A. Fenton, late civil surgeon at Mandalay. Capt. S. C. Contractor has been appointed to the Jail Department, Madras. Lt.-Col, F. P. Warwick has been reposted as Civil Surgeon, Amraoti, on return from leave. Maj. G. H. Mahony has been appointed Civil Surgeon and Superintendent of the Jail at Saugor. Lt.-Col. C. A. Sprawson has resumed his appointment as Principal of King George's Medical College, Lucknow. Maj. A. Seddon, civil surgeon, Saharanpur, has reverted to military employment.

DEATHS IN THE SERVICES.

Surg.-General Howard James McChleary Todd, C.B., R.N., hon. surgeon to the King, who died suddenly at Gosport, Hants, on Nov. 6th, was born on Sept. 20th, 1855. He was the son of Mr. M. G. Todd, of Hove, and was educated at Dr. Seaver's School at Brighton, and at St. Thomas's Hospital where he was a prizeman. He entered the Naval Medical Service in 1876 and was in medical charge with the Niger Expedition in 1879. For his services during the yellow fever epidemic at Jamaica in 1885–86 he received the thanks of the Admiralty, and in 1891 he was thanked by the Foreign Office for his services as acting Consular surgeon at Mapanda's Kraal. Surg.-General Todd married in 1893 Florence Agnes, daughter of Mr. E. Haynes, of Thimbleby, Yorks, by whom he had one son and two daughters.

LIVERPOOL'S ACID RAIN.—During the last year 615 tons of organic matter—nitrates, bitumen, calcium salts, sulphates, and chlorides—came down with the rain on each square mile of Liverpool's most densely populated districts. The bronze of the Queen Victoria monument at the end of Lord-street has been so acted on by the sulphuric acid in the rain-water that the copper sulphate formed has sunk to a distance of 4 inches in the Portland stone on which the monument stands.

Medical News.

University of Oxford: *Hospital Scholarships.*—Entrance scholarships and exhibitions have recently been awarded to the undermentioned members of the Oxford Medical School at the hospitals named:—Guy's Hospital: O. A. Beadle, New Coll.; L. T. Ride, New Coll. King's College Hospital: C. F. J. Cropper, University; A. W. Cubitt, Wadham; W. G. Rees, Jesus. St. George's Hospital: H. E. Mansell, Pembroke. St. Mary's Hospital: D. H. Brinton, New Coll.; W. Hurst Brown, Queen's. Westminster Hospital: W. R. Greene, Pembroke; A. T. Leslie Spinks, Oriel; M. G. Pearson, Keble; H. G. Wells, Magdalen.

Chelsea Clinical Society.—A meeting of this Society will be held in the Board Room of St. George's Hospital on Nov. 17th, at 8.30 P.M., when insulin treatment will be discussed by the following speakers, among others: Drs. E. P. Poulton, George Graham, P. J. Cammidge, and F. G. Crookshank.

Royal Medico-Psychological Association.—The next quarterly meeting of the Association will take place at 2.30 P.M. on Tuesday, Nov. 17th, at 11, Chandos-street, Cavendish-square, London, W. 1, under the presidency of Sir Frederick Mott. Dr. J. Carswell will open a discussion on Insanity and Crime: Some Suggestions arising out of the Atkin Report.

Royal Commission on National Health Insurance.—The forty-fourth meeting of the Commission was held at the Home Office, Whitehall, on Nov. 5th and 6th, Lord Lawrence of Kingsgate and later Sir Arthur Worley in the chair. Evidence was given by Sir William Glyn-Jones as to the powers and duties of insurance committees and the limited field of work open to them under the conditions of the insurance scheme as it has now developed. Thereafter the Commission sat in private to review the evidence which has been received since it began its work and to consider the questions arising therefrom.

Royal Society.—Among the honours conferred this year by the Royal Society are a royal medal to Prof. W. H. Perkins, F.R.S., for work on the constitution of the alkaloids; the Davy Medal to Sir James Irvine, F.R.S., for his work on the constitution of the sugars; the Hughes Medal to Mr. F. E. Smith, F.R.S., for his determination of fundamental electrical units and for researches in technical electricity. Prof. A. Einstein, foreign member R.S., has been awarded the Copley Medal for his theory of relativity and his contributions to the quantum theory. The following have been recommended by the President and Council for election to the Council at the anniversary meeting on Nov. 30th:—President: Sir Ernest Rutherford. Treasurer: Sir David Prain. Secretaries: Mr. J. H. Jeans and Dr. H. H. Dale. Foreign Secretary: Sir Richard Glazebrook. Other Members of Council: Prof. J. H. Ashworth, Prof. L. Bairstow, Prof. F. O. Bower, Prof. S. Chapman, Sir Dugald Clerk, Prof. F. G. Donnan, Prof. E. J. Garwood, Prof. J. P. Hill, Prof. J. B. Leathes, Prof. J. C. G. Ledingham, Sir Thomas Lewis, Prof. F. A. Lindemann, Sir Robert Robertson, Sir Charles Sherrington, Dr. G. C. Simpson, and Mr. W. C. D. Whetham.

Fellowship of Medicine and Post-Graduate Medical Association.—On Monday, Nov. 16th, at 5.30 P.M. Sir Henry Gauvain will lecture for the Fellowship of Medicine on Light Treatment of Surgical Tuberculosis in the Lecture Hall of the Medical Society of London, 11, Chandos-street. This lecture is open to all members of the medical profession. The West End Hospital for Nervous Diseases will hold a three weeks' course from Nov. 23rd, dealing with the diagnosis and treatment of nervous diseases. The lecture-demonstrations will be given at 5 P.M. in the Out-patient Department, 73, Welbeck-street, W. 1. From Nov. 23rd to Dec. 12th the Royal Waterloo Hospital will hold a course in medicine, surgery, and gynæcology, covering all departments pertaining to diseases of women and children. For the convenience of the general practitioner whose available time is limited, the London Temperance Hospital has arranged a late afternoon course (4.30 to 6 o'clock) in general medicine, surgery, and the specialties, from Nov. 23rd to Dec. 4th. There will be a special course at the Infants Hospital from Nov. 30th to Dec. 13th. In December there will be the following special courses: Dermatology, Dec. 7th to 19th, at the Blackfriars Skin Hospital, and a similar afternoon course (4.30 to 6.30) at the Hampstead General Hospital from Dec. 7th to 19th. A copy of each syllabus and the Fellowship general course programme will be forwarded on application to the Secretary of the Fellowship of Medicine, 1, Wimpole-street, London, W. 1.

The death is announced from Habana of Dr. Juan Guiteras, pathologist and hygienist, at the age of 74 years. His study of yellow fever in Cuba is well known.

Tuberculosis Society.—A meeting of this society will be held at 1, Upper Montague-street, Russell-square, London, on Friday, Nov. 20th, at 8 P.M., when Dr. A. Sandison will read a paper on Swiss Sanatoria from the English Standpoint.

Royal Statistical Society.—The first meeting of the session will be held on Tuesday, Nov. 17th, at 5.15 P.M., at the Royal Society of Arts, John-street, W.C. 2, when Mr. G. Udny Yule, F.R.S., will read his presidential address: "Why do we Sometimes get Nonsense-correlations before Time Series? A Study in Sampling and the Nature of Time Series."

The Glasgow University Club, London, will dine at the Trocadero Restaurant, Piccadilly, on the evening of Friday, Dec. 4th, when Sir Henry Craik, M.P., will preside. Any Glasgow University men who, though not members of the Club, would like to attend should communicate with the Hon. Secretaries, 1, Harley-place, London, N.W. 1.

Temporary Home of the Foundling Hospital.—The governors of the Foundling Hospital have purchased the Royal St. Anne's Schools at Redhill as a home for the institution pending the acquisition of a new property and the erection upon it of the necessary buildings.

Model Abattoir Society.—The fourth annual Benjamin Ward Richardson Memorial Lecture will be delivered on Friday, Nov. 20th, at 5.30 P.M., in the Lecture Hall of the Royal Society of Medicine, 1, Wimpole-street, W. 1, by Dr. William J. Howarth, medical officer of health, City of London, on the Slaughtering of Animals for Human Consumption. The lecturer will deal with methods practised, desirability of centralisation in relation to meat hygiene, and the avoidance of cruelty. Admission is free, without tickets.

Royal Faculty of Physicians and Surgeons of Glasgow.—At the annual meeting of the Royal Faculty held on Nov. 3rd the following officers were elected for the years 1925 and 1926:—President: Mr. R. M. Buchanan; Visitor: Dr. G. H. Edington; Treasurer: Mr. J. H. MacDonald; Hon. Librarian: Dr. E. H. L. Oliphant; and Dr. James A. Adams, Dr. A. Freeland Fergus, Dr. J. M. Munro Kerr, Mr. Thomas Kay, Mr. Archibald Young, Dr. John Henderson, Dr. H. L. G. Leask, Mr. R. Barclay Ness, Dr. W. G. Dun, and Mr. J. Forbes Webster were appointed councillors.

Glasgow Victoria Infirmary.—Towards the £100,000 required for the extensions that are being made, £57,000 has been subscribed, but by fewer than 200 persons, and an intensive appeal for the balance is now being made. The extensions include new operating theatres and a new nurses' home. The infirmary, which was founded 35 years ago with 84 beds and cots, now has 260, and treats ten times the number of patients whom it succoured in 1890.

Torbay Hospital.—Last week the freedom of the borough of Torquay was conferred upon Mrs. Francis Rowcroft in recognition of her gift of £100,000 for the erection of the new Torbay Hospital. She and her sister, Mrs. Wills, have between them given £123,000 for this purpose. These ladies are the grand-daughters of the late Sir Edward Payson Wills, Bart., of the firm of W. D. and H. O. Wills.

Overcrowded Mental Hospitals.—At the last meeting of the Staffordshire Mental Hospitals Board it was reported that the three mental hospitals in the county are all overcrowded. At Burntwood there are 146, at Cheddleton 66, and at Stafford between 30 and 40 patients in excess of the authorised numbers. It was complained that the boards of guardians were sending many mild cases which might well be treated in their own institutions.

The late Dr. G. L. Pardington.—George Lucas Pardington, M.D. Durh., M.R.C.P., who died on Nov. 1st, was one of the oldest medical practitioners in Tunbridge Wells. A Gloucestershire man, he studied medicine at St. Bartholomew's Hospital, qualifying in 1878 and taking the M.B. Durh. two years later. In 1903 he was admitted to the Membership of the Royal College of Physicians. After a short stay in London he settled at Tunbridge Wells, where he had an extensive general practice, which as time went on became more of a consultant character; he was for many years on the honorary staff of the Tunbridge Wells General Hospital. Dr. Pardington was specially interested in climatic problems, of which he had made some little study at home and abroad; he was a member of the Council of the Balneological Section of the Royal Society of Medicine. His contributions to the medical press covered a wide field of clinical problems.

PADDINGTON HOSPITALS.—The four hospitals in the borough of Paddington are burdened by debts amounting to about £50,000, and a determined attempt is being made to place them in a more stable position. St. Mary's spends £60,000 a year and its assured income is only one-third of that sum. The Children's Hospital admits nearly 900 patients a year to its wards. The venerable London Lock Hospital, the pioneer in the treatment of venereal disease, is hampered by insufficient income and an increasing debt, and the Paddington Tuberculosis Dispensary, which claims to have been the first of its kind in England, also needs help.

ROYAL MEDICAL BENEVOLENT FUND.—At the last meeting of the committee 71 cases were considered and £658 voted to 54 applicants. The following is a summary of some of the new cases relieved :—

L.R.C.P. Edin., 1888, aged 73. Met with a motor-bicycle accident while acting as assistant to a doctor and broke both legs and his right clavicle. A doctor at the hospital approached the Fund with a view to getting him away to a convalescent home. An emergency grant of £10 was sent to be used for the applicant's benefit ; a further £6 was voted.

M.R.C.S. Eng., 1869, aged 80, who practised in Berkshire and retired. Married and has two children. Investments have failed and applicant, wife, and youngest daughter, aged 47, are now living on money received by the sale of household goods. This case has been investigated through the Guild and the report states that they live in a dingy old house which has a mortgage on it for £730. The interest on this and rates amount to £52 per annum. The eldest daughter, aged 51, is a widow and she is maintained by her son, so cannot render any assistance to her father and mother. An emergency grant of £5 was sent and the Committee voted £40 in 12 monthly instalments.

Widow, aged 68, of M.R.C.P.I., 1880, who practised for 20 years in Wales and died in 1898. Applicant is a trained nurse and has supported herself since her husband's death. She has just had an operation for cataract and is asking for assistance as she has no means and is not yet old enough for the Old Age Pension. £5 was sent as an emergency grant, and a further £5 was voted.

L.S.A., 1884, aged 62, who prior to the war was a ship's surgeon. Served during the war, 1914 to 1923, when he was demobilised from the R.A.M.C., Ireland. Since has made a small income by taking locums. In February last was ill and unable to get further employment, and owing to events in Ireland came to the end of his resources. His wife left him in 1922. November, 1924, Officers' Association gave £5 to enable him to take a post and again in September, 1925, a further £5 was given to his sister for his benefit. As the applicant was very ill he was admitted to King's College Hospital, and when better the Fund was approached with a view to getting him away to a convalescent home. The Fund gave £2 12*s.* 6*d.* for this object.

M.D. Brux. and L.R.C.P. Edin., 1897, aged 57. Unable to get locums has applied to the Fund for assistance. During the last 12 months has received £105 from locums and has had, unfortunately, to apply to the guardians to live, who made an allowance for applicant and wife of 30*s.* a week from Sept. 11th. The rent of one room is 12*s.* 6*d.* a week. Our local secretary sends us a satisfactory report. On his recommendation £5 was sent at once.

Widow, aged 56, of L.R.C.P. Lond. who practised in London and died in July. The late doctor gave up his practice during the war and was unable to take it up again. They had resident patients who were looked after and nursed by the applicant. From paying guests £137 was received during the last 12 months. The rent and rates amount to £90 per annum. The applicant is anxious to get rid of the responsibility of the house and will give it up at the end of this year. She is thoroughly domesticated and a good nurse, and hopes to get a post as housekeeper in a private family. Voted £15 in two instalments.

Widow, aged 85, of M.R.C.S. Eng., 1860, who practised in Lincolnshire and London and died in 1894. She is allowed to live with her daughter who is a housekeeper who earns £50 per annum. The applicant has the Old Age Pension and an allowance of £6 from her eldest son. Three other married sons unable to help. The applicant pays 5*s.* a week towards her board. Voted £30 in 12 monthly instalments.

Widow, aged 53, of M.D. Aberd., 1879, and died in August, who practised until incapacitated by paralysis. The three pensions died with him. Applicant now left without means and the only money in the home is paid by two daughters for their board and lodging at the rate of £1 a week each. Rent and rates are £42 per annum. Applicant's late husband was a pensioner of the Fund. Voted £10 in two instalments.

Widow, aged 68, of M.D. Glasg. who practised in Scotland and died in March, 1922. The long illness of the doctor crippled their resources, and since his death the applicant has tried to live on the income made by letting apartments in the summer. This summer she has only made £40. The cottage occupied is her own and she has to pay rates £17 per annum. A report from the Guild local secretary says it is a case deserving of financial help from the Fund. Voted £18 in 12 monthly instalments.

Widow, aged 58, of M.B. Edin. who was a medical superintendent at a hospiatl and died suddenly in August. A grant is asked to tide over the next few months while all business matters are being settled. Her probable income will contribute £35 towards her board. The applicant has had the house done up in order to let and has now succeeded in letting two rooms which will bring in £42 per annum. Rent and rates amount to £47 per annum. Applicant has no children. Voted £10.

Subscriptions may be sent to the honorary treasurer, Sir Charters Symonds, at 11, Chandos-street, Cavendish-square, W. 1.

THE LATE DR. R. R. JONES.—The death occurred at Bangor on Oct. 26th of Dr. Rees Rowland Jones in his sixty-ninth year. The son of a Cardiganshire farmer, he was educated at Durham University and the London Hospital, and became M.R.C.S. Eng. in 1880. He held house surgeon appointments at Newcastle and Bangor and settled in the latter town where he gained a large practice. He was an honorary medical officer and radiologist to the Carnarvonshire and Anglesey Infirmary and medical officer for the Bangor section of the Bangor and Beaumaris Union. Dr. Jones took a keen interest in local and national affairs and was deputy mayor of Bangor ; ill-health prevented his accepting the office of mayor. He was twice married, and leaves nine children.

SOCIETY OF MEMBERS OF THE ROYAL COLLEGE OF SURGEONS OF ENGLAND.—At the annual meeting to be held at the College next Thursday, Nov. 19th, at 3 P.M., Dr. L. Haden Guest will move :

> "That this thirty-seventh annual meeting of Fellows and Members again affirms the desirability of admitting Members to direct representation upon the Council of the College, which, as now constituted, only represents those Members who also hold the Fellowship. It does so in order that the constitution of the Council of the Royal College of Surgeons of England shall be in keeping with modern ideas of true representation, and more in conformity with the present-day requirements of its Members and Fellows.
>
> "Further, that as the Royal College of Surgeons of England is composed of 19,147 persons, of whom no less than 17,361 are Members, the majority engaged in general practice, this annual meeting respectfully requests the Council (now about to apply to H.M. Privy Council for a supplementary Charter) to avail themselves of this special opportunity to insert a provision therein for some representation of Members, as such, upon the Council of the College, and so restore a right they enjoyed prior to the Charter of 1843."

The resolution will be supported by Dr. J. O'Donovan, Mr. M. J. Smyth, F.R.C.S., and Mr. F. Lawson Dodd, L.D.S.

LADY HARDINGE MEDICAL COLLEGE.—The Government of India has decided to raise its grant to the Lady Hardinge Medical College at Delhi from Rs.200,000 to Rs.310,000. It has also made a grant, for the current year only, of Rs.98,000 for equipment, and the stage of acute financial stringency through which the College has passed is thus satisfactorily ended. The increased grant will enable the College authorities to bring the whole of the attached hospital into use for the first time.

ST. BARTHOLOMEW'S HOSPITAL, ROCHESTER.—It has been decided to spend £80,000 in enlarging this hospital. Founded in 1078 and reconstituted in 1858, St. Bartholomew's claims to be the oldest foundation in the country. It is at present a hospital of 105 beds, but a further 50 beds are to be provided. The Dean of Rochester, the Governor, emphasises the pressure caused by the increase in the number of street accidents, and there are now more than 11,000 patients annually.

Medical Diary.

SOCIETIES.

ROYAL SOCIETY, Burlington House, Piccadilly, W.

THURSDAY, Nov. 19th, 4.30 P.M.—*The following Papers will be Read :* J. W. Pickering and R. J. Gladstone : The Development of Blood Plasma. Part I. The Genesis of Coagulable Material in Embryo Chicks (communicated by Prof. W. D. Halliburton). D. J. Scourfield : On a New Type of Crustacean from the Old Red Sandstone (Rhynie Chert Bed, Aberdeenshire), Lepidocaris Rhyniensis (communicated by Dr. W. T. Calman). J. R. Norman : The Development of the Chondrocranium of the Eel (*Anguilla vulgaris*) with Observations on the Comparative Morphology and Development of the Chondrocranium in Bony Fishes (communicated by Prof. E. W. MacBride). J. Needham and Dorothy Needham : The Hydrogen-Ion Concentration and Oxidation-reduction Potential of the Cell-Interior before and after Fertilisation ; a Micro-Injection Study of Marine Eggs (communicated by Sir Frederick Hopkins). R. R. Armstrong : Studies on the Nature of the Immunity Reaction (communicated by Sir Frederick Andrewes) R. J. Ludford : The Cytology of Tar Tumours (communicated by Dr. J. A. Murray). Eric Ponder : The Inhibitory Effect of Blood Serum on Hæmolysis (communicated by Sir E. Sharpey Schafer). L. Brull and F. Eichholz : The Effects of Calcium and Potassium Ions on Urine Secretion as studied in the whole Animal (communicated by Prof. E. H. Starling). L. Brull and F. Eichholz : The Secretion of Inorganic Phosphate by the Kidney (communicated by Prof. E. H. Starling). F. Eichholz, R. Robison, and L. Brull : Hydrolysis of Phosphoric Esters by the Kidney *in vivo* (communicated by Prof. E. H. Starling).

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

Monday, Nov. 16th.

THE DAVID LLOYD ROBERTS LECTURE: at 5.30 P.M.
This Lecture will be delivered by Sir Arthur Keith, on Man's Structural Defects.

Tuesday, Nov. 17th.

GENERAL MEETING OF FELLOWS: at 5.30 P.M.

PATHOLOGY: at 8.30 P.M.
Papers:
Mrs. M. M. Barratt: The Susceptibility of Rats and Mice to Diphtheroid Infections.
Miss D. B. Steabben: Further Experiments on the Action of Colloidal Substances.
Dr. C. Dukes: Early Stages in Cancer of the Rectum.

Wednesday, Nov. 18th.

HISTORY OF MEDICINE: In view of the date and time of the Thomas Vicary Lecture, the November Meeting of this Section is cancelled.

Thursday, Nov. 19th.

DERMATOLOGY: at 5 P.M. (Cases at 4 P.M.)
Cases will be shown.

Annual Dinner of the Society.

Hotel Victoria: 7.30 for 8 P.M.

Friday, Nov. 20th.

ELECTRO-THERAPEUTICS: at 8.30 P.M.
Cinematographic Demonstration:
Dr. L. D. Bailey: Recovery of Function after Nerve Anastomosis.
Demonstration of the
De Forrest Talking Films, with reference to their scope and possibilities in Medical Education. Introductory remarks by Dr. C. B. Heald.

ROYAL SOCIETY OF TROPICAL MEDICINE AND HYGIENE.
Thursday, Nov. 19th.—8.15 P.M. (at the London School of Hygiene and Tropical Medicine, Endsleigh-gardens, Euston-road), Laboratory Meeting, at which, among others, the following will give demonstrations: Col. A. Alcock, Drs. Andrew Balfour, H. A. Baylis, Major K. K. Chatterji, Drs. Aldo Castellani, J. T. Duncan, Th. Jeekes, Prof. R. T. Leiper, Drs. H. B. Newham, H. H. Scott, Lieut.-Colonel H. Marrian Perry, Drs. N. A. Dyce Sharp, J. Gordon Thomson, and C. M. Wenyon.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

ROYAL COLLEGE OF PHYSICIANS, Pall Mall East, S.W.
Monday, Nov. 16th.—5.30 P.M. (at the Royal Society of Medicine, 1, Wimpole-street, W.), Sir Arthur Keith: Man's Structural Defects (Lloyd Roberts Lecture).

ROYAL COLLEGE OF SURGEONS OF ENGLAND, Lincoln's Inn Fields, W.C.
Wednesday, Nov. 18th.—5 P.M., Prof. William Wright: The Mediæval Conception of the Anatomy and Physiology of the Central Nervous System (Thomas Vicary Lecture).

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W.
Monday, Nov. 16th, to Saturday, Nov. 21st.—Fellowship of Medicine Lecture, Medical Society, 11, Chandos-street, W. Mon., 5.30, Sir Henry Gauvain: Light Treatment of Surgical Tuberculosis.—Chelsea Hospital for Women, Arthur-street, S.W. Post-graduate Course in Gynæcology. Lectures and Demonstrations daily. Operations and Pathology.—London Lock Hospital, Dean-street, W. Comprehensive Course, Instruction in the Out-patient Department and Lectures.—City of London Hospital for Diseases of the Heart and Lungs, Victoria Park, E. Special Course in Diseases of the Heart and Lungs. Lectures, Clinical Demonstrations, and Laboratory Demonstrations.—St. John's Hospital, Leicester-square, W.C. Daily Demonstrations in the Out-patient Department. Bi-weekly Lectures Tuesday and Thursday at 5.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N.
Thursday, Nov. 19th.—3 P.M., Mr. E. Miles Atkinson: Hearing Tests. 4.30 P.M., Dr. J. Metcalfe: The X Ray Examination of Pelvic Conditions.
Daily: In-patient and Out-patient Clinics in General and Special Departments, Operations, &c.

THE LONDON SCHOOL OF DERMATOLOGY, St. John's Hospital, 49, Leicester-square, W.C.
Tuesday, Nov. 17th.—5 P.M., Dr. A. Whitfield: Diseases due to Fungi (1).
Thursday.—5 P.M., Dr. R. F. Fagan: Pathological Demonstration.

CENTRAL LONDON THROAT, NOSE, AND EAR HOSPITAL, Gray's Inn-road, W.C.
Friday, Nov. 20th.—3 P.M., Mr. Watkyn-Thomas: An Intra-Cranial Case.

QUEEN CHARLOTTE'S MATERNITY HOSPITAL, Marylebone-road, N.W.
Thursday, Nov. 19th.—5 P.M., Mr. Trevor B. Davies: Clinical Aspects of Abortion.

CHADWICK PUBLIC LECTURES.
Wednesday, Nov. 18th.—5.15 P.M. (in the Barnes Hall of the Royal Society of Medicine, 1, Wimpole-street), Sir Wilfred Beveridge: Insects in Relation to Public Health.

NATIONAL HOSPITAL FOR THE PARALYSED AND EPILEPTIC, Queen-square, Bloomsbury, W.C.
POST-GRADUATE COURSE: October–November, 1925.
Clinical Lectures and Demonstrations.
Monday, Nov. 16th.—2 P.M., Out-patient Clinic: Dr. Hinds Howell. 3.30 P.M., Papillœdema: Mr. Williamson Noble.
Tuesday, Nov. 17th.—2 P.M., Out-patient Clinic: Dr. Walshe. 3.30 P.M., Neurosyphilis: Dr. Hinds Howell.
Thursday, Nov. 19th.—2 P.M., Out-patient Clinic: Dr. Kinnier Wilson. 3.30 P.M., Method of Investigating the Eighth Nerve: Mr. Just.
Friday, Nov. 20th.—2 P.M., Out-patient Clinic: Dr. Adie. 3.30 P.M., Poliomyelitis: Dr. Collier.
The fee for the Course, including Pathology Lectures, is £5 5*s.* For those who hold Perpetual Tickets the fee is £3 3*s.*

Course of Lectures and Demonstrations on the Pathology of the Nervous System.
Thursday, Nov. 19th.—12 noon, Syphilis of Nervous System: Dr. J. G. Greenfield.

Course of Lectures and Demonstrations on the Anatomy and Physiology of the Nervous System.
Monday, Nov. 16th.—12 noon, The Cerebral Hemispheres: Dr. J. L. Birley.
Dr. H. J. Macbride is giving a Course of Eight Clinical Demonstrations, chiefly on Methods of Examination of the Nervous System, in the Wards at 10 A.M. on Tuesdays and Fridays. The fee for this Course is £2 2*s.*
Mr. Armour and Mr. Sargent operate at the Hospital on Tuesday and Friday mornings at 9 A.M., or at such other times as may be announced.
Any part of the Course may be taken separately. Special arrangements will be made for those unable to take the whole Course.
Fees should be paid to the Secretary of the Hospital at the Office on entering for the Course.
J. G. Greenfield, Dean of Medical School.

MANCHESTER ROYAL INFIRMARY, POST-GRADUATE COURSE.
Tuesday, Nov. 17th.—4.15 P.M., Lloyd Roberts Lecture at St. Mary's Hospital. Dr. T. Watts Eden: What We Can Do for the Unborn Child.
Friday.—4.15 P.M., Prof. J. S. B. Stopford: The Sympathetic Nervous System.

ST. MARY'S HOSPITALS, Manchester.
Tuesday, Nov. 17th (at the Whitworth-street West branch), Dr. T. Watts Eden: What We Can Do for the Unborn Child (Lloyd Roberts Lecture).

ANCOATS HOSPITAL POST-GRADUATE LECTURES.
Thursday, Nov. 19th.—4.15 P.M., Mr. H. Platt: The Treatment of Common Fractures, with Practical Demonstrations.

JAMES MACKENZIE INSTITUTE FOR CLINICAL RESEARCH, ST. ANDREWS.
Tuesday, Nov. 17th.—4 P.M., Prof. Herring: The Use of Insulin.
Saturday.—12 noon, Prof. Murray Lyon and Assistants: Demonstration in the Royal Infirmary, Edinburgh.

ROYAL INSTITUTE OF PUBLIC HEALTH, 37, Russell-square, W.C.
Wednesday, Nov. 18th.—4 P.M., Dr. C. W. Saleeby: The Rôle of Clothing in the Prevention and Arrest of Disease.

Appointments.

Anderson, W. W., M.B., Ch.B. Edin., has been appointed Certifying Surgeon under the Factory and Workshop Acts for Whitchurch.

Gray, J. S. M'Lean, Assistant Tuberculosis Officer and Assistant Medical Officer of Health for Renfrew.

Tibbles, S. G., L.R.C.P., L.R.C.S. Edin., L.R.F.P.S. Glasg., Honorary Oculist to the Actors' Association and the Actors' Benevolent Fund.

Vacancies.

For further information refer to the advertisement columns.

Acton Hospital, Gunnersbury-lane, Acton, W.—Res. M.O. £150.
Altrincham General Hospital, Cheshire.—H.S. £125.
Belgrave Hospital for Children, Clapham-road, S.W.—Hon. Radiologist.
Birkenhead Borough Hospital.—Jun. H.S. £100.
Birmingham General Hospital.—Asst. P.
Bournemouth, Royal Victoria and West Hants Hospital.—Hon. S., Hon. Asst. M.O., Hon. Anæsth., Hon. Dermatologist, and Hon. Dent. S.'s.
Brighton, New Hospital for Women and Children.—Hon. Clin. Asst.
Brighton, Royal Alexandra Hospital for Sick Children.—H.S. £100.
Cambridge, Mental Hospital.—Med. Supt. £800.
Cardiff, Welsh National School of Medicine.—Lecturer in Pathology and Bacteriology. £750.
City of London Maternity Hospital, City-road, E.C.—Res. M.O. At rate of £100.
Douglas, Isle of Man, Noble's Hospital.—Res. H.S. £175.
East London Hospital for Children and Dispensary for Women, Shadwell, E.—Asst. P. £50.

Elizabeth Garrett Anderson Hospital, Euston-road.—H.P., Obstet. Asst., and Two H.S.'s. Each at rate of £50. Also Clin. Assts.
Evelina Hospital for Children, Southwark, S.E.—H.S. At rate of £120.
Hospital for Sick Children, Great Ormond-street, W.C.—H.S. and H.P. Each at rate of £50.
Hove Hospital, Sackville-road.—Res. M.O. £175.
Inverness Northern Infirmary.—Jun. Med. Resident. £100.
Iraq Health Department.—Two M.O.'s. Rs.1200.
Lancashire County Council.—County Analyst. £800.
Lancaster, Borough of.—Asst. M.O.H. and Asst. Sch. M.O. £500.
Liverpool and District Heart Hospital.—Hon. P. and Asst. Hon. P.
London Hospital, Mile End, E.—Hon. Dent. Surg.
London Lock Hospital, 91, Dean-street, W.—Clinical Assistantships.
London Royal Free Hospital, School of Medicine for Women, 8, Hunter-street, W.C.—Sen. Second and Third Assts. for Obstetrical and Gynæcological Unit. £350 to £500.
Longton Hospital, Stoke-on-Trent.—H.S. £150.
Maidstone, Kent County Mental Hospital.—Asst. M.O. £300.
Maidstone, Kent County Ophthalmic Hospital.—H.S. £300.
Margate, Royal Sea Bathing Hospital.—H.S. At rate of £200.
Metropolitan Hospital, Kingsland-road, E.—Pathologist.
Miller General Hospital for South-East London, Greenwich-road, S.E.—Res. Cas. O. £150.
Northamptonshire County Council.—M.O.H. and Sch. M.O. £1100.
Norwich, City and County of.—M.O.H. £1100.
Plymouth Royal Eye Infirmary.—Hon. S.
Preston County Borough.—Asst. M.O. for Maternity and Child Welfare. £600.
Prince of Wales's General Hospital, Tottenham, N.—Clin. Assts., Hon. Anæsthetist.
Queen Charlotte's Maternity Hospital, Marylebone-road, N.W.—Asst. Res. M.O. At rate of £80.
Queen's Hospital for Children, Hackney-road, Bethnal Green, E.—H.P. At rate of £100.
Rhondda Urban District Council.—Asst. M.O. £600.
Royal College of Surgeons of England.—Examiners.
Royal Waterloo Hospital for Children and Women, Waterloo-road, S.E.—Non. Res. Cas. O. £150. Also H.S. and H.P. Each at rate of £100.
St. Bride's, Pembrokeshire, Kensington Hospital.—Asst. Res. M.O. £200.
St. Helen's County Borough.—Asst. M.O.H. £600.
Sheffield, Jessop Hospital for Women.—Asst. H.S. At rate of £100.
Singapore, College of Medicine.—Prof. of Biochemistry and Prof. of Biology. Each $850–$1000.
University of London.—Associate Examiners.
West London Hospital, Hammersmith-road, W.—H.P., H.S., Aural H.S., and Res. Cas. O. Each at rate of £100.
Willesden General Hospital, Harlesden-road, N.W.—Hon. P.

The Chief Inspector of Factories, Home Office, London, S.W., announces vacancies for Certifying Factory Surgeons at Teddington, Middlesex; Rhyl, Flintshire; Croston, Lancs; and Renfrew.

Births, Marriages, and Deaths.

BIRTHS.

BIRKETT.—On Nov. 3rd, at a nursing home, the wife of G. E. Birkett, M.C., M.R.C.S., High-street, Manchester, S.E., of a daughter.

HOLMES.—On Nov. 6th, at Denbigh, N. Wales, the wife of E. A. Holmes, M.R.C.S., of a daughter.

MARRIAGES.

BENSON—FULTON.—On Nov. 5th, at St. Paul's, Knightsbridge, Dr. Eric John Benson to Beryl Helen, youngest daughter of the late Lieut.-Colonel Carre Fulton, the Durham Light Infantry, and of Mrs. Fulton, late of Guernsey.

SHEARD—VARLEY.—Nov. 3rd, 1925, at Brock-street United Methodist Church, Lancaster, Arthur Sheard, M.D., 13, Hanover-square, Leeds, elder son of Mr. and Mrs. Joe Sheard, 36, Sunny Bank, Longwood, Huddersfield, to Alice Gertrude, eldest daughter of Mr. and Mrs. Arthur Varley, 36, Dallas-road, Lancaster.

DEATHS.

CRADDOCK.—On Nov. 4th, at "Somerdale," Greenway-lane, Bath, Samuel Craddock, M.R.C.S., aged 91.

DAVIDSON.—On Oct. 28th, at Charmouth, Dorsetshire, Harold Davidson, M.R.C.S., L.R.C.P., of Teddington, aged 64 years.

LASLETT.—On Nov. 2nd, Maurice Howard Laslett, L.R.C.P., M.R.C.S., late Captain, R.A.M.C., of Duncan-road, Gillingham, Kent.

LAY.—On Nov. 6th, at Peasenhall, Suffolk, Charles Edward Lay, M.D. Edin., L.R.C.P., M.R.C.S.

NEWTON.—On Nov. 9th, at Deene House, Kettering, Lancelot Newton, M.R.C.S., L.S.A., of Alconbury Hill, Huntingdon, aged 79.

ST. GEORGE MIVART.—On Nov. 5th, very suddenly, F. St. George Mivart, M.D., aged 70.

TODD.—On Nov. 6th, suddenly, Surg.-General Howard J. M. Todd, C.B., K.H.S., J.P., of Anglesey House, Alverstoke, aged 70.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Notes, Comments, and Abstracts.

CONTROL OF THE FOOD-SUPPLY.

A SECOND lecture on the Control of the Food-Supply was delivered on Nov. 6th by Dr. W. J. Howarth (medical officer of health for the City of London) at the Royal Sanitary Institute, when several interesting judgments were expressed on contentious points. Dr. Howarth ranged himself on the side of those who believe that raw milk is far better than milk treated in any way by heat; he thought that dairymen who sterilise milk spoil it. All milk which has been pasteurised should be declared as such; the regulations should be varied, and it should be made an offence to treat milk without declaration. At present there is no guarantee that milk which is pasteurised quasi-secretly is not submitted to more than one treatment. Dr. Howarth held that persons had no right to engage in the milk trade unless they had the knowledge necessary to prevent their business being a danger to the public health and unless they possessed the capital necessary for its conduct on hygienic lines. The advertising caption "London's safest milk" contained a cynical suggestion; London's worst milk should make the producing cow blush. The effect of the teaching of the agricultural colleges on clean milk ought to make itself felt on the next generation of farmers.

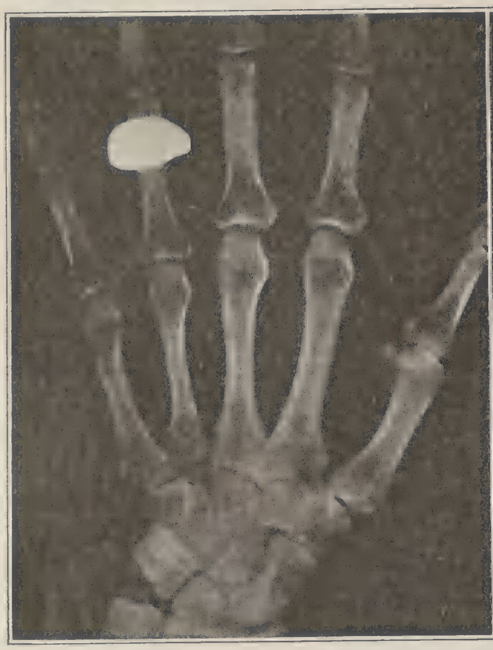
Dr. Howarth regarded the definition of cream in the Preservatives Order as "that portion of milk rich in milk fat which has been separated by skimming or otherwise" as far too indefinite. Samples of cream containing 20, 30, and 50 per cent. of fat were shown; none of them could be distinguished by the naked eye from another. On the contrary a sample of 33 per cent. homogenised cream had a richer appearance than the 50 per cent. cream, so that the public can easily be deceived and often pay the same price for articles of very different food value. A food standard of cream should be laid down by legislation. Discussing cowsheds, Dr. Howarth thought the standard in this country deplorably low, and he deplored the position reached about the legal standard of milk; case law had forced us to accept milk from the cow as a legal test of non-sophistication. If a cow gave wretchedly poor milk below the low legal standard it should be eliminated from the herd. When a farmer could send to his customer the first part of the milk drawn, which is notoriously poor in cream, and retain the second portion rich in cream for his own calves, surely we had reached the limit of statutory toleration. Some of the analyst's results which were, in a way, too satisfactory as regards fat content—fat percentages of 4, 5, or 6, or even over, being found—might be explained by the jolting of the milk churns during the long railway journey, which caused the cream to rise to the top of the milk on its arrival; it was found impossible to mix the milk so as to make the contents of the churn uniform. Milk which had been frozen presented a difficulty; the part containing the cream and the fat was the last to freeze; thawing must be gradual and the time given to subsequent mixing generous. The audience were shown two Dutch (hard) cheeses, of which the one made of skimmed milk had the better flavour, though the other was made of full cream milk. The housewife would probably buy the less nutritive. Legislation enabling the consumer to purchase according to food value was required.

The position as regards eggs was explained; no means existed for ascertaining the age of an egg within very wide limits, and legislation was contemplated which would necessitate the stamping of eggs with the name of the country of origin. Dr. Howarth thought it unreasonable to require that parcels of food containing damaged portions should be thrown away, and instanced a consignment of coffee containing unsound berries which after removal of the unsatisfactory portion had been found quite wholesome. In reply to a question he expressed the view that in spite of the results of animal experiments putrefying meat should be condemned partly on æsthetic grounds and partly because of the possible existence of more than one infection.

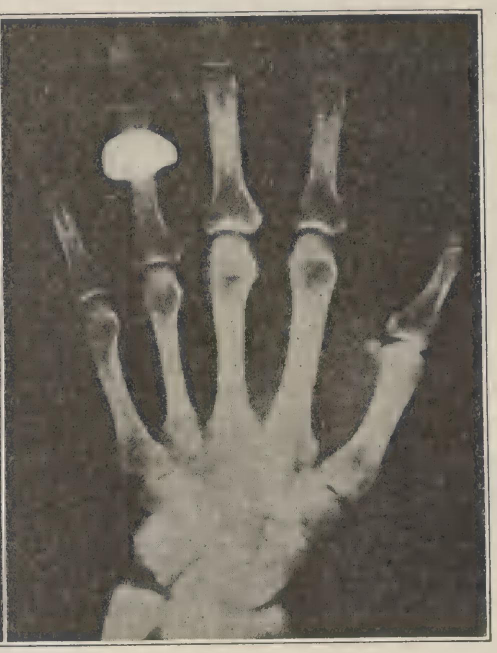
TELEPHONING RADIOGRAMS.

ON April 15th, 1925, a radiogram showing the bones of the hand was telephoned from New York to Chicago in seven minutes, and it is stated that details were not lost in transmission. We reproduce below a radiogram said to have been telephotographed and the facsimile which was received at the other end, and although there is a very definite loss of clearness, the facsimile is nevertheless remarkably accurate, and compares favourably with some reproductions of sound over the same instrument.

It is said that in sleep it is impossible to feel surprise, and the stream of modern invention is having a slightly hypnotic effect on the public. This particular invention, however, is supposed to be startling in its usefulness and especially to the medical profession. "Medical consultation between doctors on X ray plates transmitted by radio or telegraph is a realisation that should find a most useful place in these progressive times," says Dr. J. M. Steiner, radiologist to the Roosevelt Hospital, New York. "The quick transmission obtained by this method should afford untold satisfaction to both the consultant dock [sic] and the anxious family. In New York hospitals they frequently have patients who are either injured or taken ill while travelling. These patients, being in strange hands, naturally desire their home physician in consultation. If explicit information could be quickly transmitted to the home physician much needless travel could be avoided, saving the home physician or family a trip to New York. Many times physicians in other cities, desiring an opinion from a New York consultant, could materially shorten a tedious delay if X ray plates were quickly transmitted by telegraph to New York consultants, who in turn could render an opinion within an hour or two where otherwise several days to a week or more might be involved. Written descriptions or word pictures even of such simple conditions as fractures are often misleading, whereas the actual conditions shown graphically in X ray plates are more convincing."



The radiogram transmitted.



The facsimile received.

If the reproduction which the specialist is to receive were as good as the original his advice would obviously be valuable, but it is a little difficult to think of a situation in which the specialist could see more in a clouded copy than the practitioner could see in the original radiogram. The practitioner has the additional advantage of seeing the patient himself. The finer shades of structure are diminished in the photograph we have seen, and it is chiefly in the interpretation of these finer shades that the expert scores. Admittedly such a photograph might be better than "written descriptions or word pictures," and it might possibly be useful if a radiologist were present who was not also a doctor; but if the invention is to encourage the local doctor to rely on the opinion of someone who has not seen the case it should stimulate the supporters of the back-to-the-bedside movement to further activity. A story is told of a lady who received a severe fracture of the knee during a recent tornado in the Middle West and had to be taken to New York because the medical men available were not X ray specialists and could not treat her; but if the story induces reflection, it is not necessarily on the value of telephotography.

BRITISH MOSQUITOES AND THEIR BITES.

DURING recent years, and particularly since 1917, when the return of many malarious soldiers from the East gave rise to locally contracted cases of malaria in several parts of England, increased attention has been given to the annoyance and ill-health that may be caused by mosquitoes in this country. The menace of malaria ceased when sufferers from the disease no longer arrived in large numbers from abroad, but interest in the harmful activities of the mosquito in England has not abated. Cases of septicæmia following their bites are occasionally reported, and in some areas the insects are so disturbing as to discourage visitors from returning. To meet the demand for information the British Museum (Natural History) has issued a booklet on "British Mosquitoes and their Control," by F. W. Edwards, of the Department of Entomology, and Lieut.-Colonel S. P. James, M.D., of the Ministry of Health. In reference to the difficulties of control it is stated that there are 26 different species of mosquito which occur in England, and most of them have different habits of life. Some do not bite human beings; some bite mainly in houses, others in the open air; some are troublesome in spring, others in autumn; and there are differences in breeding seasons and habitat. The writers consider that it is important in any locality where anti-mosquito work is begun to make a study of the prevalent species. Measures appropriate against the adult insects and larvæ are described, and a short account of means of protection against bites. The ideal substance for the latter purpose has yet to be found, but the following preparations are suitable for general use: (1) A 50 per cent. alcoholic solution of thymol or of oil of cloves in lanolin. (2) Oil of cassia, 1 part; brown oil of camphor, 2 parts; lanolin, 4 parts. (3) Citronella oil, 1½ parts; kerosene, 1 part; coconut oil, 2 parts; to which is added carbolic acid, 1 per cent. It is useful to wear two pairs of thin stockings or socks since few mosquitoes will bite through two layers of material, however thin. An application of an alkali such as weak ammonia or washing soda will generally reduce the irritating swelling that follows a bite, and thus prevent infective scratching; in serious cases iodine in glycerine should be applied to the bite and the surrounding skin twice a day. This interesting short account of the British mosquitoes can be obtained from the Natural History Museum, Cromwell-road, S.W. 7; the price is only 6*d*.

MANCHESTER NURSES' LONG HOURS.

MANCHESTER had a "Duty Week" from Oct. 25th to 31st, when, according to posters displayed in prominent situations in the city, everyone was invited to be "on duty" in an effort to help the fund for the establishment of a new nurses' home for the Royal Infirmary. At a luncheon on Oct. 22nd Lord Derby and other speakers appealed particularly to the representatives of trades and associations for much-needed assistance. The new building alone will cost £90,000 and will consist of 270 bedrooms, sitting-rooms, and recreation-rooms. Manchester, it was pointed out, was at the moment at the bottom of large cities with regard to the hours its nurses have to work. The night staff works 73 hours a week and the day staff 63 hours. These are the bare facts and it was for them to endeavour to remedy them. For the real efficiency of the nurses more leisure was required, and in order to arrive at this by bringing the working hours down to 58 it was necessary to add 172 nurses and domestic workers to the staff of the Royal Infirmary. The Chairman of the Infirmary Board said many nurses broke down in health every year and 66 per cent. left the hospital before they had finished their first year of training. Already £36,000 had been given towards the scheme and £5000 of that was raised by the nurses themselves.

An Address

ON THE NATURE OF

MAN'S STRUCTURAL IMPERFECTIONS.

Being the Lloyd Roberts Lecture given to the Royal Society of Medicine on Nov. 16th, 1925,

BY SIR ARTHUR KEITH, F.R.S.,
CONSERVATOR OF THE MUSEUM OF THE ROYAL COLLEGE OF SURGEONS, ENGLAND.

BETWEEN the activities of Archdeacon Paley and those of Élie Metchnikoff lies the greater part of the nineteenth century. At the beginning of that century we find the Archdeacon extolling the perfections of the human body, just as Celsus had done 16 centuries before him.[1] By the close of the nineteenth century the alert and fearless brain of Élie Metchnikoff had discovered, or believed it had discovered, that the human body was blemished by many imperfections. The evangelist of this new and startling doctrine approached the study of man's body by an untrodden pathway, one made possible by the advancing science of his day. On his arrival at the Institut Pasteur in 1888, being then 43 years of age, he set himself to investigate the means by which the human body combats and keeps at bay the swarming hosts of micro-organisms which find a natural habitat in its internal passages and recesses. He saw man's body as a battlefield—the scene of a perpetual warfare—and as his investigation proceeded the conviction grew on him that the chances of the body's success were imperilled by a heritage of structures which had become out of date and useless.

In the Wild lecture, given before the Literary and Philosophical Society of Manchester on April 22nd, 1901, he declared that man "was being killed by his intestinal flora," and that his great bowel had not only become useless, but was a positive and continual menace to the rest of his body. He believed that the stomach itself, and also part of the small intestine, could be dispensed with. Early in 1903 appeared "Études sur la Nature Humaine,"[2] in which Metchnikoff greatly extended the list of man's structural imperfections.

Between the times of Paley and of Metchnikoff lie three great discoveries, and we must take note of them if we are to understand how it was possible for the one to praise the perfection of man's structure at the beginning of the nineteenth century and the other to condemn its imperfections at the end. There was first the discovery that man's body was an aggregate or society of living microscopical units; it was Metchnikoff's fortune to approach the study of man's highly complex body through the simpler societies represented by the bodies of the lower invertebrates; it was thus he came by his discovery that certain units of such societies retain their freedom, thus permitting them to serve as scavengers or phagocytes. In the second place there was Darwin's discovery; Metchnikoff was a convinced evolutionist. He therefore presumed that the alimentary outfit which served in an anthropoid phase of human evolution must be ill-adapted to deal with the dietary of civilised man. There was in the third place Pasteur's discovery, and so far as Metchnikoff's outlook was concerned this was the most potent of the three. It was under the influence of Pasteur's discoveries that Metchnikoff came to think that the destiny of man lay in the issue of the everlasting contest which went on between the living tissues of his body and the invading hosts of micro-organisms which threatened them. It is noteworthy that of the three men—Darwin, Pasteur, and Metchnikoff—who revolutionised in the nineteenth century our conception of man's body, and of the struggles to which it is subjected, not one of them was a professed anatomist; the anatomist stood too near to the subject of his study to see it in its true perspective.

Twenty-two years have come and gone since Metchnikoff's studies on "La Nature Humaine"[3] first appeared, and I propose in this lecture to ascertain how far his doctrines of man's structural imperfections and functional disharmonies has stood the test of time. His thesis presumed that Darwin's theory of man's origin was true; that presumption has been supported by every discovery of the present century, and such evidence as we now have justifies us in believing that the rate of man's evolution has been more rapid than has hitherto been supposed.[4]

THE INFLUENCE OF CIVILISATION.

We realise to-day, more precisely than was possible when Metchnikoff wrote, that the most critical chapter in man's long history opened with the discovery of agriculture, a discovery of but yesterday if we reckon time on a geological scale. Agriculture revolutionised the conditions of human life; it made modern civilisation possible. We have reason to believe that this revolution in the condition of man's life was initiated either in Mesopotamia, Egypt, or adjacent lands, not more than 8000 years ago. It is certainly not more than 5000 years ago since agriculture began to be practised in Western Europe. The vast majority of the people of these islands, probably 90 per cent. of them, are the descendants of men and women who, 200 generations ago, were dependent on the natural but precarious harvest which is provided by shore, river, forest, and moorland. City life is a new experiment for Europeans; most of us who live in London, if we could go back 20 generations, would find an ancestry which was living on the soil and of the soil. And now the poorest of us can add to our dietary produce brought from the ends of the earth. The alimentary system which was evolved to meet the needs of our primitive ancestors has now to accommodate itself to a modern dietary.

Beyond a doubt civilisation is submitting the human body to a vast and critical experiment. It is not only the alimentary system which is being subjected to new conditions; the bony and muscular framework of our bodies are being subjected to novel stresses. Of the present manhood of Britain, half earns its bread by muscular labour; the other half lives sedentary lives. Our forefathers when they arrived in Western Europe were hunters; their bodies were unaccustomed to either manual labour or an indoor life; under the stress of civilisation the hunter's body has to serve modern needs. It says much for the adaptability of the human body that it stands these stresses so well as it does. Dr. J. D. Comrie,[5] on examining 10,000 recruits for the army, found that 363 of them suffered from hernia and 113 from flat-foot. Such breakdowns in the supporting system of the body do not occur with this frequency among hunting peoples. Civilisation has laid bare some of the weak points in the human body, but the conditions which have provoked them are not of Nature's ordaining, but of man's choosing.

If modern civilisation is making new demands on our bones, muscles, and nerve controls it is otherwise with another important system of our bodies. As our manner of living increases in comfort the calls on our heat-regulating mechanism become fewer in number and less urgent in character. Our primitive forefathers lived in the open; their bodies, unhoused and scantily clad, were exposed to sun, rain, wind, and storm. Such a mode of life throws an increasing burden on the machinery which regulates body temperature—on skin, on respiratory mucous membrane, and on that elaborate system of reflexes which control the rate of internal combustion. Modern civilisation, so far as temperature is concerned, tends to make the human body a hothouse plant.

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[1] See Evolution of Anatomy, by Dr. Charles Singer (1925), p. 50.

[2] An English translation, edited by Dr. P. Chalmers Mitchell, was published in 1904 under the title The Nature of Man (Heinemann).

[3] In 1907 Metchnikoff published a further work, of which an English translation appeared in the same year, edited by Dr. P. Chalmers Mitchell, under the title The Prolongation of Life. In this Metchnikoff replied to his critics and produced more evidence in support of his thesis. Sir W. Arbuthnot Lane formed the opinion that the great intestine was a useless and dangerous structure independently of Metchnikoff; so also did Prof. Barclay Smith (see an article on the Nature of the Cæcum and Appendix by the present lecturer in Brit. Med. Jour., 1912, ii., 1599).

[4] See Concerning the Rate of Man's Evolution, Nature (special supplement), August 18th, 1923.

[5] THE LANCET, 1919, ii., 959.

Failures of Adaptation.

Metchnikoff perceived that civilisation had plunged man's body into a new environment, and that the rate of its progress had far outstripped the power of adaptional response which had carried man so far beyond the anthropoid stage. A belief grew within him—almost a grudge—that Nature was letting man down. He brought against the evolutionary powers which preside over the destiny of man both sins of omission and sins of commission. We shall deal with a sample of each. The first complaint on his list of omissions is that we have not shed from our skins the last remnants of an anthropoid pelage; hair on the body, he held, was useless and a source of disease. Whether or not a completely hairless body is desirable we may leave as a moot point; a hairless breed of dogs has been produced, and, no doubt, a hairless race of man could be evolved. In this matter the Caucasian has been outstripped by the Negro and by the Mongol, the most hairless of races. It is more to the point to inquire how man has come by a comparatively hairless skin, and in the solution of this problem we have been making some advance. A hairless condition became possible with the evolution of the higher vertebrates; a fœtus in the womb draws its heat from the mother's body; it has no need of a hairy covering until the period of birth arrives. There is in the Museum of the Royal College of Surgeons of England a chimpanzee fœtus in the eighth month of development; the hair of its head and body has reached a stage identical with that of a newly born child. A stage of development which is evanescent in the fœtal anthropoid has become permanent in us. We have come by a new character through the inheritance of one evolved in fœtal life. Many of our structural features have come to us in this way.[6] The base of the human skull is greatly flexed. In the fœtal stage of all mammals the basicranial axis is bent, but in man only has this character been carried into adult years. Fœtal inheritance becomes more and more possible for man because civilisation tends to make man's world into a protective womb.

As an instance of a sin of commission, the introduction of a new and useless structure to the human body, Metchnikoff cites the case of the hymen. It is scarcely true to describe, as he does, the hymen as a new structure; it is present at a certain stage in the embryonic life of every higher mammal; it is only in the human species that it persists and forms a definite and substantial structure in the fully formed body. The hymen provides another example of the human body coming by a new character by retaining and modifying a structure which made its first appearance during embryonic or fœtal life. When we seek to explain its use, we must enter the purlieus of psychology, for round man's sense of sex has grown up a strange hinterland in his subconscious mind. Metchnikoff described the hymen as "an unpleasant impediment," but love, as the world has long recognised, thrives on impediments. The human prepuce, although not a new structure was, in Metchnikoff's opinion, a useless and dangerous one; circumcision in one generation does not diminish the completeness of its development in the next. In this the prepuce resembles the hymen. Indeed, Metchnikoff said of the latter structure that the only purpose it had ever served was "the overthrow of the dogma of the inheritance of acquired characters."

The Large Intestine.

The examples of the failure of man's body to adapt itself to present requirements which I have cited above are of little more than academic interest, but when Metchnikoff applied his analytical genius to the problems of man's alimentary system he carried us into the realms where thought becomes the guide to action. "It would be no longer rash to say (so he wrote in 1903) that not only the rudimentary appendix and the cæcum, but the whole of the human large intestine is superfluous, and that their removal would be attended with happy results." Since Metchnikoff penned this sentence the operation of complete colectomy has been performed on many thousands of men and women, but I do not think that even the surgeons who have performed this operation most frequently and most successfully would maintain that a man or woman who has been rendered colonless enjoys that moderate share of health which falls to the average intact individual. If a finger becomes permanently fixed in an awkward position the hand is improved by the amputation of the offending digit, but the relief thus gained does not restore the hand to its original capacity. The relief afforded by colectomy is of the same kind; the results of that operation in no wise bear out Metchnikoff's doctrine that the colon has become a superfluous organ in man's body. On the other hand, we have only to consult the pages of the medical press, to listen to tales which reach our ears daily, to note the ever-growing demand for patent purgatives, to be convinced that there is, as Metchnikoff maintained, a grave disharmony between the functional capacities of our great intestine and the dietary which modern civilisation has compelled us to adopt. The way out of our difficulties is not to call the colon a useless organ, a "sewage pipe," a "cesspool," but to discover its original purpose and ascertain how far we can modify our mode of living to suit its inherited capacity. What that capacity is we have yet to discover, for we have no complete or exact knowledge of the uses of the great intestine in any animal whatsoever. So far as the human organ is concerned surgery has stepped far in advance of physiology.[7]

Since Metchnikoff first promulgated his belief that the appendix, cæcum, and colon had become superfluous organs in man's body our knowledge concerning the evolution of these structures and of certain conditions which regulate their action has increased. That increase of knowledge rehabilitates the ancient belief that Nature in her evolutionary mood exercises not only a surprising ingenuity but also the strictest economy. The ferments and catalysts elaborated by plants for their own use were made to serve in the animal body as vitamins. How necessary such substances are for the proper working of the great bowel has been shown by the recent researches of McCarrison[8] and of Cramer.[9] It was for the purposes of economy that the great bowel came into existence. In fishes, the earliest vertebrate forms known to us in the living state, potent digestive juices have to be produced at the expense of body tissues; with the evolution of land-living, air-breathing forms much of this expenditure was saved by the utilisation of bacterial digestion. The great bowel was added to the original intestine for this purpose, the oldest part of this annex being the cæcum and appendix. The great bowel, as we know it in fishes, is a mere diverticulum from the hinder end of the gut; it takes no part in the digestion of food. Its epithelium forms a glandular structure which has all the appearance of an organ designed for the supply of an internal secretion.[10] That secretion, whatever it may prove to be, is carried to the liver by the inferior mesenteric vein. In the mucous membrane of the human great bowel there is set embedded in a stratum of reticular tissue—of reticulo-endothelium—some 15 millions of minute test-tube glands—the glands of Lieberkühn. No one who has noted the structure and setting of these glands and the finer changes which their cells undergo in the course of action, can believe that their sole function is to supply a lubricating fluid for the intestine; they have all the appearance of also supplying an internal secretion, and the evolutionary history of the colon favours such an inference.[11] The reticular stratum of the colon, which Dr. Scott Williamson[12] regards as the most important constituent of its mucous membrane, and in this I agree with him, represents a spleen of considerable size. Indeed, just as the liver and pancreas represent extrusions of highly specialised parts of the intestinal epithelium, the spleen represents a specialisation of the reticulo-endothelium of the alimentary canal; indeed, in Cyclostomes[13] the spleen is still intra-intestinal. Nor must we forget how closely the great intestine is linked to the central nervous system—both by afferent and efferent pathways. When we take all these considerations into account, we must conclude that the great bowel of man is not a useless or superfluous organ, but one which we, in our ignorance, are maltreating.

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[6] Prof. Louis Bolk: The Part Played by the Endocrine Glands in the Evolution of Man, The Lancet, 1921, ii., 588. See also Keith: The Evolution of Human Races in the Light of the Hormone Theory, Johns Hopkins Hospital Bulletin, 1922, xxxiii., 195.

[7] The reader will find a summary of the anatomical evidence relating to the nature of the appendix, cæcum, and great bowe by the lecturer in Brit. Med. Jour., 1912, ii., 1599.

[8] Lieut.-Colonel R. McCarrison: Faulty Food in Relationship to Gastro-Intestinal Disorders, The Lancet, 1922, i., 207 Other references to Colonel McCarrison's researches will be found in this paper.

[9] Dr. W. Cramer: The Lancet, 1921, ii., 1202; 1924, i., 636

THE APPENDIX.

Darwin regarded the appendix as one of man's vestigial structures, and Metchnikoff accepted this verdict without demur, although there were then anatomists, particularly Prof. R. J. Berry,[14] who refused to regard the appendix as a useless structure. Every child is born with a fully and well-developed appendix, which varies in length round a mean of 35 mm. Ribbert's investigations[15] showed that amongst the Swiss the appendix has reached its maximum length, 97 mm., by the twentieth year; thereafter the average length falls slowly, so that by the sixtieth year it has become reduced to 85 mm. Prof. Berry[16] found in the population of Edinburgh that the appendix did not attain its full length, 89 mm., until the fortieth year, falling to 83 mm. by the sixtieth year. Dr. Garcia and Dr. Salloza[17] measured the length of the appendix amongst Phillipinos—a people living chiefly on a vegetarian dietary. By the twentieth year the appendix of this people had attained a length of 81 mm.; its maximum length, 96 mm., was not reached until the fiftieth year, while the average length fell to 82 mm. by the seventieth year. An organ which increases in length until the twentieth year, or even until the fiftieth, does not merit the name vestigial. The size of the appendix at birth in the various forms of anthropoid apes we do not know, but in adult gorillas, chimpanzees, and orangs the appendix usually attains a length of 150 or 160 mm.—nearly double the length of the human appendix. In the most primitive form of anthropoid known to us, the gibbon, the appendix is most variable in length. In six animals which I dissected fresh from the jungle, all of them adult, the appendix varied in length from 75 mm. to 175 mm. In two of the animals the cæcal contents were laden with numerous fruit stones as large as those of a cherry; the appendix in these two cases held a row of fruit stones, showing that it shared in the digestive work of the cæcum. There is no evidence to lead us to believe that anthropoid apes suffer from appendicitis in their natural habitat; they become subject to this disease when kept in confinement. Of 61 chimpanzees dying in captivity, ten of them suffered from appendicitis.[18] The evidence, such as it is, leads us to believe that when the appendix breaks down under the conditions of modern civilisation it does so not because it is "vestigial," but because of its inability to withstand the conditions to which it is being exposed.

To express the real nature of the structural and functional imperfections seen in the human appendix it is convenient to use a term coined by the late Sir William Gowers. He noted that in some families certain structures, such as the hair on the crown of the head, was apt to be shed as the result of a premature atrophy of the scalp. To such instances of premature senility on the part of any organ or structure he applied the term *abiotrophy*.[19] In this sense the appendix is an abiotrophic structure, one which is apt to suffer from a disordered life-history; in a large proportion of Europeans it becomes atrophic or senile when other parts of the body are in full vigour. On the evidence collected by anatomists and pathologists it is permissible to infer that if we could follow the life-histories of 1000 modern Europeans from birth to their seventieth year the following would be the fate of their appendices. By the end of the tenth year the lumen of this structure would be partially or completely obliterated in 40 of them; by the twentieth year the same fate would have overtaken 70 more; by the thirtieth year 60 others would have been added to the list; by the fortieth year 80 further cases of obliteration would have occurred; by the sixtieth year there would be 110 additional cases. Of the 1000 people who reached the age of 70, only 500 of them would retain their appendix in an unblemished functional state; in the other 500 the appendix would have undergone a premature atrophy at succeeding stages in the journey through life. In this the appendix keeps company with all structures which are of a lymphoidal nature. The tonsils, the thymus, lymphatic glands, and Peyer's patches have similar life-histories, but no one would describe them as vestiges or rudiments. There is much in the name we apply to structures; when we name them "vestigial," "congenital," or "useless" we shut the door on all further inquiry. As Paley declared a century ago, our list of "useless" structures decreases as our stock of knowledge increases.

THE EYE.

The eye, which is man's chief organ of sense has, under the stress of civilisation, become the subject of a wrong growth or abiotrophy. If we take 1000 men or women over the age of 25 we shall find that about 150 of them suffer from a degree of myopia which prevents them from seeing distant objects clearly. And yet in all of them, just as was the case of the appendix, the eye was normal at birth; the incidence of the disorder is somewhat similar to that of the appendix; it appears during the period in which the eye is undergoing growth—a process of the most complex kind[20]; in a few, myopic changes appear by the fifth year, the highest rate of incidence taking place as puberty is reached and passed. We cannot believe that among our hunting ancestors, for whom distant sight was so vital, every seventh man was myopic.

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[10] Dr. Doris R. Crofts: Proc. Zool. Soc., 1925, Part I., pp. 101–170.

[11] I have not mentioned the excretory function of the colon. This has been investigated by Dr. Owen T. Williams, Brit. Med. Jour., 1912, ii., 1281.

[12] Brit. Jour. Surg., 1914, ii., 306.

[13] J. Mawas: C. R. Acad. de Science, 1922, clxxiv., pp. 889–1041.

[14] Anat. Anz., 1895, x., 761; Jour. Anat. and Physiol., 1906, xl., 247.

[15] Prof. Ribbert: Virchow's Archives, 1893, cxxxii., 66.

[16] Prof. R. J. Berry: Anat. Anz., 1895, x.

[17] Garcia and Salloza: Philippine Jour. of Science, 1921, xviii., 707. See also Fawcett and Blackford, Jour. Anat. and Physiol., 1900, xxxiv., 21, and Sir Rutherford Macphail, Ibid., 917, li., 306.

[18] Weinberg: Bull de la Soc. de Path., 1908, i., 556.

[19] Subsequently the reader will see that I use this term in a somewhat wider sense—one which includes irregular as well as reduced growth.

[20] I have dealt with the incidence and nature of myopia in Brit. Jour. of Physiological Optics, 1925, i., 369.

Myopia we must regard as a structural disharmony occasioned by the conditions which civilisation has entailed on us. Short-sight, as Dr. John Kirk has stated,[21] is certainly a disorder of growth, and the essential problem is to discover not why 15 per cent. of our population suffers from it, but why it does not occur in the remaining 85 per cent. Children may be fed on the same food and undergo the same school tasks, yet only in certain individuals does the eyeball undergo abnormal elongation. They only are affected by modern conditions, the others are not.

Perhaps no structure in the human body illustrates abiotrophic changes so well as the lens of the eye. By the age of 45 the elasticity of the lens has become so reduced in most of us that we have to seek the aid of spectacles. Some time ago Mr. Ernest Clarke[22] examined the eyes of 1200 people of all ages, and charted in graphic form the condition of the lens. From that chart we can see that some individuals at the age of 45 retain the elasticity of lens which is normal at 35 years of age, while others have reached a stage usually found in men and women of 60. It is with the lens of the eye, as with the appendix, abiotrophy sets in prematurely in some; in others the change is delayed.

THE TERM OF LIFE NATURAL TO MAN.

The consideration of the functional failure of the lens of the eye brings us to a problem which fascinated Metchnikoff. What is the term of life which is natural to man? Metchnikoff inclined to place it at 100 years—that if we escaped accident and disease the inherent vitality of our tissues was sufficient to make a centenarian of everyone—yet at the age of 45 the lens of the normal man is already old; it has reached the term of its full utility. We have no reason to suppose that civilisation has shortened or is shortening its period of usefulness. The indication it affords supports the belief that nature has worked out the evolution of the human family on a mean life tenure of 45 years; she has hitherto run the human army on a short-service system. Unfortunately we have no vital statistics of our nearest allies, the anthropoid apes. Micky, a chimpanzee which died lately in the Zoological Gardens, lived there for 26 years, and was three or four years of age when he arrived. Thirty years ago I made an intensive study on the age changes of the teeth and skulls of the great anthropoid apes, and came to the conclusion that very few of them reached the fifth decade of life. All the elastic tissue and cartilage of the body keep the lens company in their rate of ageing; they lose their resiliency by the middle of the fifth decade. The age of 45 sees the end of the term of childbearing which is normal for women. When we consult the rates of mortality which now prevail we find that a sudden rise sets in during the fifth decade, and this rise assumes a steeper and steeper gradient with every subsequent decade. All of these facts seem to show that 45 was the span allotted to man when he was the blind slave of Nature. Civilisation now permits many men and women to live the span of two such lives, but whether it would be an advantage for civilisation that all should live to be centenarians, as Metchnikoff believed, is a moot point. We must take civilisation in the round; if it has searched out the weak points in our inherited organisation it has also added incalculably to the span and comfort of life.

THE TEETH AND JAWS.

All the structural imperfections of man's body which have been discussed up to this point are of a kind which perish in the grave. We have no means of telling whether or not our remote ancestors suffered from appendicitis or were the victims of myopia. Fortunately, from this point of view there are certain of the durable parts of man's body which manifest abiotrophic changes—the teeth and jaws. During the last 20 years I have had an opportunity of examining the facial parts of over 300 individuals who lived in England more than a thousand years ago, some of them as much as eight or ten thousand years ago. Seven years ago I made an elaborate comparison between 50 of these ancient skulls, 25 of which were adjudged to be those of men and 25 of women, with equal numbers of individuals who had lived in England within the last two centuries.[23] In only three of the 50 ancient skulls did the upper and lower teeth fail to meet in an edge to edge bite; in all of the 50 modern skulls the bite was of the overlapping or scissors type. Our teeth are in an abiotrophic state; the failure of the wisdom teeth or third molars to form, or to erupt if they are formed, is but one symptom of this abiotrophic change: it affects crown, cusp, and root development. In the 50 ancient skulls, instead of 100 upper wisdom teeth, there were only 82, 13 being absent from non-development and 5 from non-eruption. In the 50 modern skulls instead of 100 upper wisdom teeth, there were only 59; 30 of these were absent from non-development, 11 from non-eruption. Such evidence shows that although abiotrophic changes had overtaken the dental system of the Western European as early as the Neolithic period, yet these changes have been accelerated during the more recent centuries. Dental abscesses were nearly as common in the ancient skulls as in the modern; carious teeth, on the other hand, were three times more frequent in modern skulls than in the ancient. The researches of the Mellanbys[24] have proved that the quality of enamel and of dentine, particularly of secondary dentine, has a relation to the vitamin content of a dietary. Equally important for the proper formation of teeth, as McCollum and his colleagues[25] have demonstrated, is the presence in food of a due proportion of certain mineral salts. Nevertheless, although a school of children are exposed equally to unfavourable conditions, it is only in a certain number that dental defects will occur; in this respect the dental system behaves as do all structures which are liable to abiotrophic changes.

In not one of the 50 ancient skulls was the palate contracted, whereas in the 50 modern skulls there were 13 in which this condition was present to a recognisable degree—in more than half of them to a marked extent. No matter which stratum of our population we make observations on, we shall find that every fourth or fifth child or adult we examine possesses a palate which, compared with the older type, may be described as both deformed in shape and reduced in size. I have never seen this defect and irregularity of palatal growth except in skulls from cemeteries of the eighteenth and nineteenth centuries. It may be thought that this irregular growth with reduction in the size of palate, and the defects in the formation of the jaws and face which usually accompany them, are merely the results of the soft and highly prepared kinds of food we eat; with such a dietary the teeth, jaws, and chewing muscles are deprived of the work which fell to them in more primitive times. That this is not the true explanation is proved by this fact. When children are fed, clothed, and exercised exactly alike all are not affected; only some of them develop irregularities of the palate and jaws. There is a special susceptibility to these imperfections in certain races and in certain families.

Amongst modern British people are to be seen various facial characters, particularly in the orbits, in the cheek bones, and in the bony supports of the nose, which are never to be noted in the facial framework of people who lived in Britain during the pre-Norman period. When a continental cartoonist seeks to represent John Bull he always emphasises these new facial characteristics. Such changes in the form of the facial bones, like contraction of the palate, which they usually accompany, are not the result of a nasal obstruction such as might be caused by enlarged adenoids or tonsils; the cause lies deeper. The incidence of irregularities in the growth of the face follow the same laws as hold for all abiotrophic structures such as the appendix, the sclerotic coat of the eye, the thymus, and the tonsil. Further research will likely prove that the disorders of growth which overtake all of these structures are linked to a disturbed action of lymphocytes and of all the constituent elements of the lymphoid tissues. Dr. W. Cramer has become convinced that lymphocytes are actively concerned in assimilation of food and in the nutrition of tissues, and that the nature of the dietary does directly affect their activities. It seems to me very probable that a fuller knowledge of the life-histories of lymphocytes, particularly of the office they perform in growing tissues, will go far to explain the disharmonies which civilisation is producing in the bodies of some of us. But the problem of explaining why some members of our community are highly susceptible to these new conditions, while others are less so, and why the majority remain unaffected, will still remain.

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[21] Brit. Med. Jour., 1921, ii., 8.

[22] Nature, 1916, xcvii., 554.

[23] The details of this comparison were published in Five Lectures issued by the Dental Board of the United Kingdom, 1924.

[24] Dr. E. Mellanby: Brit. Med. Jour., 1912, i., 831; Dr. May Mellanby, Ibid., 1924, ii., 354.

[25] Johns Hopkins Hospital Bulletin, 1922, xxxiii., 202.

CONCLUSION.

I have touched only the fringe of a great subject; I have left undiscussed the numerous imperfections and disharmonies which civilisation has made manifest in structures concerned in the maintenance of posture,[26] and in those which are concerned with the circulation of blood and with the duties of respiration. I have said enough, I believe, to convince you that Metchnikoff was right when he declared that civilisation had launched man on a great experiment. From this experiment there is no turning back. We cannot return to the conditions of human life which prevailed in this country 6000 years ago; there are more people in one of the lesser back streets of London than could find an existence in the whole length and breadth of the Thames valley if we returned to the manner of living of our distant ancestors. We cannot go back; we must go on. Seeing how differently we are now circumstanced in every relationship of life—in food, in drink, in shelter, in warmth, in occupation, and in amusement—the wonder is, not that structural imperfections and functional disharmonies should develop in a proportion of our numbers, but that so many of us should escape harm altogether and enjoy good health. It says much for the adaptational reaction which is inherent to the human body that it withstands the artificial conditions of modern civilisation as well as it does.

How are our bodies to be protected against these ills with which civilisation threatens them? Metchnikoff, a declared and open rebel against Nature, hoped that science might discover some short cut for man's escape, some way of speeding up the evolutionary machinery of his body, and so making it perfectly fitted for the life which ever-advancing civilisation is forcing on mankind. I also believe that science will find a means of escape, but not by Metchnikoff's way. The solution of our problem is a fuller knowledge of the use and working of those parts of our bodies which are most apt to give way under our modern ways of living—the use of such structures as the great bowel. And when we have replaced our ignorance by real knowledge we shall then be in a position, not to adapt our bodily structures to our mode of living, but our mode of living to our bodily structures. This seems to me the best way out.

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[26] I have discussed the Imperfections of Man's Postural Structures in Brit. Med. Jour., 1923, i., 451, 493, 545, 587, 642, 669.

An Address

ON THE PROPHYLAXIS OF THE COMMON COLD AND FEBRILE CATARRHS.

Delivered before the Medical Officers of Schools Association on Nov. 6th, 1925,

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IN this paper I use the terms "common cold" and "febrile catarrhs" to indicate all those affections of the respiratory passages ranging from the common cold or coryza, on the one hand, to the diseases known variously as febricula, "flu," P.U.O., "chill," and "influenza" on the other hand, which, however much they differ in their manifestations, have this in common, that they are all infections, and all *begin* in the upper respiratory passages, causing malaise, often pyrexia, and a set-back in the normal healthy progress of adolescence. I intend, also, to deal with the prevention of these diseases *in schools*, especially the boarding schools, in which infection is so much more likely to spread, because the pupils feed, work, and sleep in common dining-halls, studies, class-rooms, and dormitories. Moreover, it is in these schools that great difficulty is experienced in finding adequate sanatorium accommodation for the patients, who so often require skilled nursing and attention in large numbers at the same time. I shall also use the term "influenza" loosely to cover all those febrile manifestations to which I have already alluded.

The appearance of these diseases in epidemic form is a matter of very great importance to schools for two main reasons: 1. Because, even though they run a normal uncomplicated course, they interfere with the work of the individual, whilst if complications arise they may jeopardise his future health and even his life. 2. Because they disorganise the whole life of the school, and are most expensive both as regards time and money. The work of a school medical officer would be reduced by one-half at least if such epidemics could be eliminated.

It would appear logical to begin by a description of the various forms of the disease as met with by medical officers of schools, and the different types which it assumes in different epidemics—e.g., the catarrhal, the anginoid, the intestinal type, and so forth. But I take it that all of us know it, with all its protean manifestations, and that we are agreed that the phenomena of this disease are due to micro-organisms, and that they are acutely infectious. The question as to the particular organisms concerned has not been finally settled, but we know that when cultures are made from the sputum or mucus of affected patients a variety of organisms are usually isolated which, if not the prime or deciding cause, are, at any rate, aiders and abettors or accomplices of the arch-offender, who or whatever he may be. Their entry into the body is by the upper respiratory passages. As to predisposing causes we can say little. It is well known that the vigorous and healthy are attacked almost as readily as those who have a less healthy constitution, though deformities of the nasal septum and turbinate bones, and the presence of unhealthy adenoid and tonsillar tissues no doubt weigh to some extent in the balance.

PREDISPOSING CAUSES.

What we know about predisposing causes is very little, and the prevention of the disease depends largely on the degree of immunity in any community for the time being. I do not mean to say that it counts for nothing if a child sits in a draught, or goes about in wet clothes or imperfectly clad, for these conditions temporarily depress vitality, but in the majority of our patients we cannot, as a rule, lay much stress on any of those conditions as a contributing cause.

Some blame the inclemency of the weather, and lay stress on seasonal incidence; others point out a certain periodicity in the waves of visitation; but whilst there may be some ground for both of these suggestions, the probability is that we can say little more than that the bodies of mankind have been discovered to be a first-rate culture medium by certain bacteria, which go on increasing in numbers and in virulence until the soil is temporarily exhausted or otherwise made untenable for their activities.

No doubt climate and season are a small factor in their environment which influence the outbreak and decline of epidemics, but it is more likely that the bacteria are themselves the victims of their own activity, and require either fresh feeding-ground or a rotation of bacterial crops before they can thrive again in the same host.

ATTEMPTS AT LOCAL ANTISEPSIS.

Attempts have been made to make the human soil untenable by disinfecting the upper respiratory passages by means of sprays, gargles, nasal douches, &c. But there are two considerations which, to my mind, make it most improbable that these measures can be of any avail.

1. The disinfectants used, if strong enough to kill the germs, will damage the epithelium with which our throats and nostrils are provided to deal with infection.

2. Even if strong enough, their contact with the micro-organisms is so short (for they are soon washed away or diluted) that the protection is likely to last for a question of minutes only. In this connexion I have noticed that where there is much nasal catarrh, constitutional symptoms do not develop so often or so severely. For by the catarrh Nature fixes and localises the disease to the naso-pharynx and "deals with it," so to speak, in situ. A common history to obtain at the outset of an attack of influenza is that the patient has recently had an ordinary cold for some time without feeling ill, but when the catarrh ceased constitutional symptoms with malaise and pyrexia first appeared. A remedy for colds much in use at one time was the "carbolic smoke-ball." Its virtue, no doubt, consisted, not in the antiseptic power of the carbolic acid, but in the fact that it produced an aseptic irritation of the nasal mucosa and caused an excess of mucus to be formed which dealt with the invading infection there and then.

With the same object in view, some medical officers have tried to educate their pupils to breathe habitually and entirely through their noses by teaching them a kind of "nasal drill." This expedient is difficult to carry out effectively and has not met with signal success: it has psychical rather than physical results.

Again, it has been suggested that all pupils should have their throats and nasal passages disinfected periodically by passing through a chamber in which a saturated spray of some vaporised disinfectant is circulated. I think this measure also is open to the criticism that the effect is too temporary and superficial to be efficacious.

PRINCIPLES OF PROPHYLAXIS.

The prophylaxis of these diseases then resolves itself into the following rules: 1. Keep out of infection's way. 2. Raise the immunity of the body. Let us deal with these separately.

1. *Avoidance of Infection.*—How can school-children keep out of infection's way? This is a large and far-reaching question. The infection is usually brought into schools at the beginning of a term by boys or girls who have left home with a cold or cough which seemed too trivial to detain them, or who during the last week of the holidays have gone through a concentrated tour of amusements at kinemas, theatres, dances, &c., and return to school somewhat tired and out of sorts, with the diseases under question incubating in their systems.

The way to tackle this source of infection is to "educate" the parents, or rather take them into our confidence, and point out the folly of indulgence of this kind. I have found it of no avail to send out a printed form, such as: "You are requested not to send your boy back to school with a heavy cold." To be of any use, a special communication must be sent periodically, written in reasonable terms, with explanations, and an appeal for coöperation on the part of the parents. Moreover, in schools situated in or near a town there is a constant risk of the infection being introduced by day-boys or boarders who must needs enter shops, hotels, and other town buildings to replenish their wardrobes, meet their parents, or go to theatrical or musical entertainments. This is to a certain extent avoided by stringent rules as to bounds and hours, and by providing the school with a food-shop of its own; but, inasmuch as the strength of a chain is that of its weakest link, all such efforts at surveillance and restrictions must almost inevitably break down, as it is enough that one pupil introduce the infection for the whole school to be exposed to its attack.

But if we ask for preliminary care on the part of parents we, too, must leave no stone unturned to avoid infection when the pupils assemble at the beginning of each term. Precautions should be taken by school authorities to ensure that all school premises are in as suitable condition as possible for pupils who have come from comfortable home-quarters to the severer rigour of the school establishments. In addition to the thorough routine cleaning and ventilation of school premises, all class-rooms and other meeting places should be warmed by the lighting of fires a few days before the pupils return, and the school routine should be entered upon gradually, not plunging at once into early hours, but gradually training the pupils to adapt themselves to their change of environment. No doubt, colds and febrile catarrhs spread much more quickly amongst boys and girls when living in their school community because they are packed into close quarters both by day and night.

It is, in my experience, chiefly in the big dormitory and small study where two or more boys live and work together that infection most easily spreads. Stated in other terms this means that they are overcrowded, and no doubt in a sense they are so, but it would be neither possible nor desirable to house boys at school as young men live at the universities—i.e., each with his own sitting-room and bedroom quite apart from that of his neighbours. Such an arrangement would materially alter the value of our boarding-schools in which close contact and publicity of life are important social and moral factors. I am quite sure that, even in dormitories where ample space (according to the accepted doctrines) is allowed, infection is carried directly from boy to boy.

There are only two remedies for these difficulties:—

(*a*) To rebuild or rearrange existing accommodation so that there are far fewer boys in each dormitory, after the plan adopted in some fever hospitals, where separate infections are nursed in the same ward without obvious ill-effects. But so long as boys are boys the theory would utterly break down in practice. There is all the difference in the world between sick patients in bed in a ward under supervision and healthy children in a dormitory with little or modified restraint. But this does not mean that we should not be strict as to the spacing of beds and ventilation in dormitories. On the contrary, the minimum space provided should at least be in accordance with the usually accepted rules, and great care should be taken that the ventilation is as good as possible.

(*b*) To make the best use of what space is available in studies and dormitories. Here, I think, a great deal could be done if more attention were paid to tidiness both of place and person. In my opinion, pupils should be paraded every morning to see that they begin the day, at any rate, tidy in appearance and apparel, and their quarters should likewise be inspected daily by a specially selected master or officer to see that they are kept clean and well ventilated. This is especially necessary where boys live and sleep in the same room, and every attempt should be made to keep such rooms free from unnecessary furniture, draperies, and other dust-collecting materials. The condition of class-rooms and other meeting places likewise requires special attention to see that they are kept clean, warm, well ventilated, and adequately lighted.

In the holidays following an epidemic, special care should be taken to begin cleaning and decorating operations *early*. I do not think that the burning of sulphur or formalin, as usually employed, has any germicidal action whatsoever, and I regard it as an unnecessary performance in which far too much trust is placed by the public and ourselves.

My impression is that girls' schools suffer less from influenzoid epidemics than boys' schools of the same grade. If this is so, I have little doubt that it is due to the greater care spent upon tidiness and general supervision of living quarters rather than to their being less closely packed. I feel sure that 100 tidy pupils will occupy the same space as 80 untidy pupils without a corresponding increase in the incidence of febrile complaints. There are many other small but important considerations which I must pass over, such as the kind and amount of food, the laundry arrangements, the hours of sleep, &c., which bear indirectly on our subject.

But there is one small detail to which insufficient attention is usually given in schools, and that is the provision of adequate foot-gear. I cannot explain why cold and damp feet should predispose to catarrhal conditions any more than coldness and dampness of any other part of the body, except that it is more often overlooked. One of the inconveniences of adolescence is a tendency to poor circulation in the extremities, and this can to a certain extent be overcome by seeing that pupils are well shod and that their boots and shoes are kept in good repair.

2. *Raising the Immunity.*—There are some individuals who seem to have a high natural immunity to infections of all kinds; some children, even before puberty, will pass through epidemics of different kinds unscathed, and it is possible that, with puberty, most people acquire a still greater degree of natural immunity. A second class, possessing less natural immunity, suffer from occasional attacks of influenza, but acquire after each attack an immunity which lasts them for a considerable length of time. There remain, however, a large number of persons of school age who acquire only a very short-lived immunity after an attack of influenza, and succumb whenever the so-called "wave" passes over their neighbourhood.

In a school of 600 boys I have known 200 to be on the sick list at one time, and a total of over 300 cases in a term, which implies the loss of about 4000 school days in a term of 12 weeks.

PROPHYLACTIC VACCINATION.

It seems to me that the longer the epidemic lasts the greater is the virulence of the infection and the more serious the nature of the complications. Consequently, it behoves us as medical officers to leave no stone unturned, at whatever cost or trouble, to stamp out or mitigate the disease and its sequelæ, and I would like to direct attention to the question of raising the immunity of the community by prophylactic vaccination.

There has so far been no combined attempt on the part of medical officers of schools to tackle a given epidemic systematically by methods and on lines on which they have previously arrived at agreement. At present the question is in a state of chaos, and I do not think that we could arrive at any certain conclusions if we had before us to-day all such evidence as can be collected, because of its fragmentary and uncoördinated nature.

There is on the one hand: 1. The evidence of individual patients who think they have or have not benefited by a "course" of prophylactic vaccines, and who swear by or belittle this form of vaccination according to the result they imagine it has produced in themselves. 2. There is the evidence of medical men who have dealt with communities such as a detachment of troops, schools, and other societies, whose evidence, if we were able to collect it, would in some cases be enthusiastic, in others lukewarm, but in no case convincing, because the methods have not been carried out on a large enough scale and with sufficient control material.

What is wanted is a combined test-effort on the part of medical officers of schools to tackle the problem thoroughly by agreeing as to the method of preparation and details of administering a vaccine at a time chosen by the doctors calculated to immunise pupils against a likely, or one may say, almost certain outbreak of influenzoid epidemic at a given season—e.g., the coming Lent term.

It may be argued that as the organism responsible for influenza is not certainly identified, this form of prophylactic vaccination is unscientific, but we do certainly know that certain accessory organisms play a not unimportant part both in the disease as we know it and in its complications. Indeed, there may possibly be no one particular responsible germ, but the disease may be due to the combined activity of several organisms, some of which we know—for instance, the virulent form of streptococcus so frequently isolated from otorrhœa following influenza. If, then, we can raise the immunity of the body against one or more such organisms we are immunising in part or in whole against the complex disease.

Stock Vaccine.—There has lately appeared in print a report of an experiment tried in September, 1919, in a boarding-house of a large public school, where each child received five injections in the course of the year of the anticatarrh vaccine made in the inoculation department of St. Mary's Hospital. The report says: "The results were so encouraging that the procedure has been continued regularly, and the record for the past four years shows that not one girl who had been duly inoculated missed a single day at school owing to colds or influenza, whereas of those girls who were not inoculated a considerable number were confined to bed with colds and influenza, and two contracted pneumonia." In this house the number of girls averaged 40, and they mixed freely with other uninoculated pupils in their class-rooms.

The vaccine here used is composed of *Micrococcus catarrhalis*, *Bacillus pneumoniæ*, pneumococcus, *Bacillus septus*, *Bacillus influenzæ*, and streptococcus in certain definite proportions, and is, no doubt, constantly reinforced at headquarters by fresh cultures taken from well-marked cases of the disease. The recorded results are excellent, but I would suggest that it would be still better if those schools which determined to join in one big concerted experiment should send to a prearranged laboratory or pathologist cultures from the naso-pharynx and throat and specimens of sputum by a given date, in order to have a vaccine of local origin made for them, leaving it to the discretion of the pathologist to incorporate such and as many strains as his experience led him to think necessary.

Such a vaccine would combine the advantages of being easily procurable and of being made from local material. This concerted experiment would have two sources of control: 1. Those schools which, for some reason, did not adopt the plan. 2. Those individuals in any school whose parents preferred not to have their children inoculated. The best time for administering the vaccine would be during the Christmas holidays immediately preceding the Lent term, and again during the last three weeks of the summer holidays so as to precede the two school winter terms in which influenza is usually most prevalent.

I feel that we have before us a great opportunity for testing the efficacy of vaccine prophylactic treatment in the case of a disease which has become a national danger and expense, and that the time has come to give it a careful trial. I often feel and say that the value of my work as medical officer of a big public school can only be judged when the boys whom I have steered through adolescence reach the fourth and fifth decade of their life. The proof of this pudding is not in the eating but in the digesting. The success of education at our schools cannot be judged by lists of scholastic distinctions so much as by the mentality and usefulness of their pupils when they attain middle age. The same, I take it, is true in medical matters, and we medical officers of schools hold in our hands the invisible keys which could open many secrets of the future health of our patients.

SENSIBILITY OF THE HEART: A HUMAN EXPERIMENT.

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With Notes by

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THE opportunity for a comparatively prolonged manipulation of the human heart in a fully conscious patient has occurred probably with sufficient infrequency to justify placing on record this case. As nearly five years have now elapsed since the date of the operation it is possible to add that the health of the patient is excellent and fully warranted the risk that was taken in exposing him to an experimental procedure. At the time of the operation his condition was one of extreme gravity and apparently hopeless. For obvious reasons, that will be explained later, a general anæsthetic could not be administered. The use of an appropriately planned regional analgesia for making a flap from the wall of the thorax was not an entire innovation, but there was no precedent to guide us as to the sensitiveness of the visceral pericardium and heart to such stimuli that the tearing down of adhesions, squeezing, and ordinary tactile pressure might evoke. Operations upon the heart had been done long previously to the discovery of general anæsthetics, and an excellent résumé of the history of cardiac surgery from early days is given by Ballance in his book "The Surgery of the Heart." But, as a rule, these operations were for severe wounds from which the patients were barely conscious and were hurried procedures that were necessitated by such emergencies. Dobson,[1] in April, 1924, successfully sutured a wound in the heart under "local anæsthesia." Another type of operation was for suppuration within the pericardium when simple incisions were made to establish drainage. In this particular case an exploratory pericardiotomy was carried out with a purely regional and local analgesia in the hope of discovering a lesion that could be benefited by surgical treatment upon a patient who was so normally conscious that he has forgotten none of the details of his experiences throughout the operation at the present day. The lesion found was a fibroplastic pericarditis binding tightly the whole of the heart muscle to the parietal pericardium with small lacunar spaces containing serous fluid intervening at intervals. The length of time taken to free the whole of the heart from its attachment to the pericardium was from 10 to 12 minutes, and the whole operation occupied about 35 minutes. At no stage of the operation did any stimulus that was applied produce any sensation that the patient was able to record in consciousness, and throughout most of the proceedings he chatted with his nurse. Neither is this the sequence of amnesia, as he can relate fully all the ordinary details of the operation that he observed at the present day.

Lennander (Upsala) and A. E. Barker (London) showed 25 years ago by operations upon the conscious human subject with local infiltration of the abdominal wall only that the alimentary tract deriving its nerve-supply from the vagus and sympathetic nervous systems was totally insensitive to all forms of stimuli except traction. The visceral layer of the pericardium and the heart in the human being deriving their nerve-supply from the same sources are shown by this operation to possess the same immunity to the stimuli applied in this case. It was further noted during the whole time when the heart was being manipulated that its beat was entirely unaffected in any way that could be recognised by the hand of the surgeon, an observation naturally of great relief to the operator. There was no subsequent reaction when the operation had been completed; actually the patient had 12 hours natural sleep immediately afterwards and the pulse-rate fell within the same period from 148 to 130 beats per minute. Such knowledge may extend conceivably the sphere of utility of cardiac surgery.

The pathological condition that was revealed at the operation fully explained the absence of any pathognomonic clinical signs for detecting its presence, as well as a reason for the cardiac shadow, examined beforehand on two occasions by X rays, showing little or no variation from the normal. The parietal pericardium, which was fully a quarter of an inch thick, clamped the heart like the case of an oncometer, and thus rendered the occurrence of enlargement or displacement impossible. This condition has been found not infrequently in the post-mortem room in cases of acute pulmonary disease as a lesion, the presence of which had not been detected beforehand. It is possible that the lives of some of those patients might have been saved by the procedure adopted in this case, which enabled a systematic and painless investigation of the pericardial contents to be carried out without the added risk of a general anæsthetic to a patient already desperately ill.

The purely medical aspects and clinical difficulties of this case were under the supervision of Sir William Willcox. I must express my thanks to him, to Dr. E. F. Furber, and to Dr. G. P. Selby (the father of the patient) for their unwearying skill and assistance in helping towards a successful termination; and not least to Dr. F. Rood for an induction of analgesia that by its perfection gave courage and confidence throughout an anxious procedure.

Details of Case.

C. P. S., aged 21 years, an officer in the R.F.C., was sent to me on Dec. 2nd, 1920, suffering from an intractable neuralgia of the median and ulnar nerves and an axial causalgia of the phantom limb of a high amputation of the left arm. He had been shot down when flying behind the German lines, and in addition to many injuries a virulent spreading sepsis of a compound fracture in the region of the left elbow-joint ultimately necessitated amputation. Ten days later a violent secondary hæmorrhage had been arrested by an urgent application of a mass ligature to the bleeding-point as he was lying in bed almost dead. (It is pleasing to put on record that he received every possible attention at the hands of the German medical service, and when the surgeon in charge o the hospital learned that the patient's father was a medical man he took the trouble to write a full technica account of the progress of the case on the back o each letter that the patient was permitted to writ home.) The symptoms suggested that the median and ulnar nerves had been included in this ligatur as well as the blood-vessels. But the causalgia wa by far the more formidable sequela, and during it agonising spasms clonic convulsions of the shoulde girdle muscles occurred as well as pink macula areas of vaso-dilatation over the same region.

At the first operation on Dec. 15th, 1920, th median and ulnar nerves and the brachial vessel were found to end in a cone-shaped terminatio distal to which the nerves expanded into larg fibro-neuromatous masses. These were resected and the ends of the nerves infolded. The sheaths of the vessels were then cleaned high up as far as the second part of the axillary artery (Leriche's operation). The region traversed in order to identify all these structures was a dense oozing fibrous mass, and the patient was exposed to the influence of open ether for nearly two hours. His temperature rose within 24 hours of the operation to 104° F., and a few days later Sir William Willcox and Dr. Furber diagnosed an extensive pneumonia of the right lung. By Dec. 23rd, 1920, a large pleural effusion had developed and two pints of a blood-stained serous fluid were drawn off by aspiration. Cultures from the fluid produced a pure growth of a hæmolytic streptococcus. A few days later an intercostal incision was made under local analgesia and Carrel-Dakin tubes inserted into what was by then an empyema cavity.

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[1] Dobson: Brit. Med. Jour., 1924,

On Jan. 2nd, 1921, patient complained of præcordial pain, and after examination Sir William Willcox diagnosed the presence of acute pericarditis. By Jan. 5th the pain had disappeared, but the patient remained acutely ill with a temperature of 103·4° F. and pulse-rate 132. On the 9th a rib was resected on the right side, again under local analgesia, as the drainage through the intercostal incision was not proving satisfactory. An abundant purulent discharge ensued from the empyema, which was still being treated by the Carrel-Dakin method, and an improvement in the general condition of the patient was maintained until Jan. 15th. From this date, however, in spite of a marked improvement in the condition of the empyema, the general condition of the patient became steadily worse. The temperature seldom fell below 102°, and the pulse-rate climbed up from an average 120–130 to an average 130–144. On Jan. 23rd the pulse-rate reached 148; the condition of the patient was then very grave, and after a consultation with Sir William Willcox, Dr. J. F. Poynton, Dr. Furber, and the patient's father a decision was arrived at to explore the pericardial cavity by operation, since the condition of the empyema was not sufficient to explain the critical condition of the patient.

Operation (6 P.M., Jan. 23rd, 1921).—After a preliminary injection of novocaine by Dr. F. Rood (for details of the procedure see note by Dr. Rood), a U-shaped incision was made over the left side of the chest so as to expose the sternal ends of the third, fourth, and fifth costal cartilages. These were cut through obliquely close to the sternum and a chrondro-plastic flap was then turned outwards using the costochondral articulations as hinges. The edges of the pleural sacs were easily identified and painlessly brushed aside with gauze. The pericardial sac was then steadied by transfixion with a sharp hook and an incision ¾ inch long was made cautiously through its thickened substance. At a depth of rather more than ¼ inch a small cavity was opened, from which about 2 drachms of turbid fluid escaped. The floor of the cavity was formed by the heart muscle and its other boundaries by recent fibrous adhesions. These were broken down carefully by the finger all round and similar small cavities opened beyond them. As the pathological condition within the pericardial sac was now obvious, the original incision in the parietal pericardium was extended upwards and downwards for about 5 inches to give access to the whole of the heart. By means of blunt instruments and fingers introduced into the sac the whole of the heart muscle was freed eventually from its attachment to the pericardium. The most difficult part was the upper portion of the posterior surface, which could be reached only after the apex, anterior surface, and lateral borders of the heart had been liberated. To effect the final step, the heart was grasped between the thumb in front and the middle and index-fingers behind. With the hand thus steadied the fingers behind were forced slowly up to the apex of the pericardial sac and with sweeping movements completed the destruction of the last of the adhesions. At no time did any detectable change in rate or quality of the heart-beat occur suggestive of resentment of these manœuvres, and the patient, as before, continued to remain quite unaware of any unpleasant proceeding. The condition of the patient was so excellent and his repeated reassurances that he felt nothing enabled the rest of the operation, involving the replacement of the chondro-plastic flap, to be conducted in a routine and orderly manner. A small piece of the fifth chondral cartilage was removed (he heard the noise made by cutting through this) to enable a drainage-tube to be placed in the pericardial sac, and the remaining cartilages were stitched back to their sternal attachments by chromic catgut. At one stage of the operation the patient said that he thought that something warm was trickling over his chest, but otherwise he experienced no sensations that gave him any knowledge of anything being done to him. He chatted frequently with the nurse standing by him, and has a clear recollection at the present day of the whole incident.

After-course.—Cultures from the pericardial fluid proved to be sterile, but a free discharge of it occurred for several days and the tube was only finally removed a fortnight after the operation. His general condition improved immediately and progressively after the operation, but a tedious convalescence was interrupted by a pulmonary infarct on Feb. 3rd, and by a premature closing of the empyema wound on Feb. 28th, which necessitated a temporary reopening. He became finally non-febrile on March 1st, and from that time onwards his pulse-rate only rose at intervals to 96. On May 7th, 1921, he was able to travel a distance of 40 miles by motor car to the country, with a pulse-rate that varied from 72 to 80. During the ensuing years he has led an active athletic life—e.g., running with harriers, swimming, sailing his own boat, playing tennis, and punting a heavily laden punt a distance of six miles or more without fatigue. Incidentally, in the midst of all these infections, the operation wound on his stump healed by first intention and he has remained free from both neuralgia and causalgia.

Note by Dr. F. ROOD.

About 5 oz. of a 2 per cent. solution of novocaine were used to produce analgesia in this case—20 ♏ of adrenalin were added to the novocaine solution in order to localise it to the site of injection and thus to prolong its action. As the operation involved exploration of the pericardium, it was, of course, necessary to produce an analgesia of the whole thickness of the chest wall and over a sufficiently wide area to allow not only for the line of incision, but also for retraction and other manipulations associated with the operation.

Thus it was necessary to render insensitive first the skin and subcutaneous tissues, then the deeper layer—the ribs, costal cartilages, and parietal pleura; finally, the *parietal* pericardium. It was naturally not possible to inject the nerves supplying the *visceral* pericardium and the heart, so that the manipulation of these tissues was the only part of the operation which could not be definitely provided for in the analgesia. This part of the operation was somewhat experimental, as we did not know previously to what extent the conscious patient would tolerate operative procedure in the interior of the pericardium.

As the skin and subcutaneous tissues over the præcordium are supplied in the upper part by the third and fourth descending branches of the cervical plexus as well as by the terminal branches of the intercostal nerves and also by the lateral cutaneous branches of these same nerves, a wide infiltration with a very fine hypodermic needle was carried out over an area of the chest wall extending from the junction of the manubrium and body of the sternum above to the ensiform cartilage below, and reaching laterally for about 3 inches on either side of the sternum. Then injecting through this insensitive area with a longer and stouter needle, the novocaine solution was introduced beneath each separate rib and costal cartilage. As this second layer of injection blocked the trunks of the intercostal nerves it produced a complete anæsthesia at the ribs and costal cartilages, the intercostal muscles, the parietal pleura, and the parietal pericardium.

This tedious infiltration method was employed rather than a pure regional anæsthesia of each intercostal nerve beneath the ribs, as the latter would have involved a series of painful punctures which, in view of the patient's condition, was not considered advisable. The patient stood the operation very well. There was no alteration in his general condition at any time and he did not resent in the least gentle intrapericardial exploration.

Note by Sir WILLIAM WILLCOX.

The usual signs of an extensive pneumonia of the lower lobe of the right lung were present on Dec. 17th, 1920, the temperature ranged from 105° to 103° F., and rusty sputum of the usual pneumonia character was freely expectorated. On Dec. 23rd, 1920, 11 A.M., the temperature still remained high, and after careful examination and consultation with Dr. E. P. Furber, whose care and attendance on the case were constant and unremitting, it became evident that fluid was present in the right pleural cavity. 10 c.cm. of slightly turbid fluid were withdrawn with an aspirating needle, and on examination by Dr. John Matthews streptococci of hæmolytic type was found to be present. On Dec. 23rd two pints of blood-stained serous fluid were aspirated by Mr. Waugh, and treatment of the right pleural cavity by Carrel-Dakin tubes was instituted. On Dec. 28th, 1920, pain occurred over the præcordial region and definite pericardial friction was detected. The temperature remained high and a well-marked pericardial rub continued audible over the præcordial region. There were still well-marked signs of fluid in the right pleural cavity, the discharge from which was of a thick purulent nature, but the præcordial pain disappeared on Jan. 5th.

On Jan. 9th, 1921, a portion of rib was resected by Mr. Waugh and a large drainage-tube inserted into the right pleural cavity. In spite of the adequate drainage of the empyema cavity the temperature remained high and a rapid pulse-rate and dyspnœa persisted with the condition of the patient growing steadily worse. It appeared clear, on clinical grounds, that the urgent symptoms could not be explained by the condition of the right pleural cavity, there being no physical signs of any collection of pus.

On Jan. 22nd, 1921, a careful X ray examination of the chest showed the right pleural cavity to be well drained and some slight increase in the cardiac shadow. The condition of the patient was so extremely grave, and it was obvious that unless surgical measures were invoked for the treatment of the pericardial condition a fatal termination would certainly follow speedily.

When on the morning of Jan. 23rd, 1921, the condition showed no improvement a final consultation was held, and Dr. F. J. Poynton very kindly saw the patient with us and reviewed the whole situation. It was unanimously agreed that operation on the pericardium for relief of the acute fibrino-plastic pericarditis held out the only possible hope of recovery. The operation was performed on that day and its details have been most accurately described by Mr. Waugh. It was my privilege to be present and observe the whole procedure. Before the operation the pulse-rate was 148, the temperature 104°, and the condition of the patient could only be described as desperate. The skill with which the local anæsthesia was carried out by Dr. Rood completely obviated the slightest pain or shock from the operation. The operation was performed with the utmost skill and rapidity, the heart being exposed and freed from its strangulating fibrino-plastic adhesions, turbid fluid escaping from the pericardial cavity, which was freely drained.

A most interesting feature of the case was that while the right pleural cavity was heavily infected with hæmolytic streptococci, and had obviously given rise to the pericarditis, yet the turbid pericardial fluid was completely sterile. This is a perfect illustration of the manner in which a septic focus caused by a definite bacterial infection may give rise to a very marked inflammatory reaction in another part of the body, the latter showing a complete absence of living bacteria.

In this case it appears probable that streptococci had been conveyed to the pericardium from the right-sided empyema, and that they had been completely destroyed by the bactericidal action of the pericardial fluid, their products, however, giving rise to the active inflammation—i.e., fibrino-plastic pericarditis. The occurrence of arthritis and very many other pathological inflammatory lesions of a sterile nature resulting from a distant focus of active bacterial infection can be accounted for on similar grounds.

The operative procedure employed in this case appears to open up a new field for the treatment of pericardial disease. The exposure of the præcordium and the opening of the pericardium are attended with little or no shock under the technique employed, and the freeing of the heart from pericardial adhesions, if newly formed, as in this case, is within the realms of practical surgery.

OBSERVATIONS UPON THE INFLUENCE OF A GLYCERINE EMULSION OF TESTES AND ADRENALS

ON TUBERCULOUS AND SENILE PATIENTS.

By V. KORENCHEVSKY, M.D.

(From the Lister Institute of Preventive Medicine.)

Historical.

1. *Adrenals.*—Several authors have a strong opinion that the functional capacity of the adrenals is important in infectious diseases, increasing or decreasing the resistance of the organism to disease (Poncet and R. Lerische (1912), M. Lucien and Parisot (1913), Biedl (1916), Cramer (1919), Lewis (1921–23), Scott (1924), and others). The action of bacterial toxins upon the adrenals seems to vary according to the degree of their toxicity and the period of time during which the animal organism is subjected to their influence. Tscheboksaroff (1911) found that during the first 10–15 hours after the injection of diphtheria toxin the amount of adrenalin in the blood is increased and in 24–27 hours following the end of this period is again normal; 2–4 days after the injection the secretion of adrenalin has decreased or ceased. Experimental data, corroborated by anatomical investigations of the adrenals of patients who died of infectious diseases, showed morphological changes in these glands varying from hyperæmia and hypertrophy to degeneration and atrophy, according to the time and strength of action of the toxins (Langois and Charrin (1896), Bogomoletz (1905), Goldzieher (1910), Lucksh (1910), Sorgo and Haletin (1916), Cramer (1919) and others). The suprarenals were investigated and found to be affected in tuberculosis (Bernard and Bigart (1906), Sezary (1908), Boinet (1909), Poncet and Leriche (1912), Parisot and Lucien (1913), Alou (1922), Wiesner (1923) and others). According to these investigations the suprarenals react by hypertrophy in cases of feeble or slowly developing infection, and by sclerosis and atrophy in cases of severe tuberculosis. In many cases tubercle bacilli could not be detected in the affected adrenals, therefore these changes can only be explained by the influence of the poisons of the bacilli. True nodular tuberculosis of the suprarenals has also been described on several occasions. According to Poncet and Leriche, Lucien and Parisot, and others, the clinical symptoms which may be ascribed to suprarenal disturbances in tuberculosis (apart from true Addison's disease) are the following: vasomotor disturbances, low blood pressure, palpitation of the heart, inclination to collapse, pigmentation of the skin, easy and pronounced sun-burning, muscular weakness,

and general asthenia, increased sensibility to cold, and psychic depression.

The above facts show that the changes in the adrenals indicate their deficiency in severe or chronic infectious diseases and intoxications. Their hypertrophy and increased secretion in cases of feeble or temporary infection or intoxication suggest their antitoxic function. This is shown more clearly by the experiments of Lewis (1921–22) and Scott (1924). Rats are among those animals which survive the removal of both adrenals. Lewis has found that double adrenalectomy increases the sensitiveness of rats to codeine, papaverin curare, cobra venom, veratrin, digitoxin, adrenalin diphtheria toxin, and especial morphine. For instance, the minimal fatal dose of morphine for operated animals was 400–500 times less than that for the controls. This decreased resistance in rats appeared immediately after the operation, but after some time it diminishes gradually and completely disappears. A mixture in vitro, or a previous injection of a watery extract of suprarenals, has not given protection against poisoning. Scott (1924) found that the resistance of rats to intoxication by dead streptococci or staphylococci was greatly decreased after double adrenalectomy. For instance, a dose could be obtained that was invariably fatal to adrenalectomised rats (before hypertrophy of the accessory glands), but never killed control rats. Scott thinks that this decreased resistance is dependent upon a functional insufficiency of the adrenal cortex. Oppenheim (1901) and Stewart and Rogoff (1922) could not obtain the same results in cats and guinea-pigs. Webb, Gilbert, Hartwell, and Ryder (1920) could not find in the changes produced after inoculation with tubercle bacilli a definite difference between adrenalectomised and control guinea-pigs, the only difference noted being a slightly earlier enlargement of inguinal glands in the operated animals. Attempts were made to utilise this antitoxic influence of the adrenals in the treatment of tuberculosis. Renon (1912), Sergent, Lereboullet, Lucien and Parisot (1913) draw attention to the satisfactory results obtained in tuberculosis by adrenal opotherapy.

2. *Sexual Glands.*—There is no doubt that the sexual glands have an internally secreting function. After removal of the sexual glands in both men and animals a change is noticed in the external appearance and the psychology, and in the striking involution of the sexual organs and of many secondary features of sex (provided castration is performed at an early age). These facts alone are sufficient to place the testes and ovaries in the group of endocrine glands. Steinach's experiments (1912) on the cross-grafting of ovaries and testes in animals of the opposite sex, also his experiments (1920) with the ligature of the vas, and the experiments of Voronoff (1923, 1924) and Thorek (1924) with testicular grafts supply evidence of the fact that the sexual glands produce an internal secretion. Steinach's experiments on rats, Sand's (1921) on dogs, and Voronoff's on goats and rams suggest that a ligature of the vas or a transplantation of the testes from a young animal may increase for a limited time some general and sexual force in old animals.

Brown-Séquard (1889) was the first to perform (on himself) dynamometer measurements of muscular strength after testicular injections. These raised his strength from 34 to 41 kg.—i.e., Brown-Séquard at the age of 72 years had regained the force which he had at the age of 26. Copriati (1892) confirmed the above results, using Mosso's ergograph. Very elaborate and exact observations by Zoth (1896) and Pregl (1896) showed that subcutaneous injections of a testicular extract combined with muscular exercise increase the muscular strength by about 50 per cent. as measured by the ergograph. Loewy (1910) found that after injections of spermin the increased oxygen consumption, which is a sign of muscular fatigue, decreases in a marked way. From all these experiments it may be concluded that the sexual glands have a stimulating influence upon the general strength of the animal, and especially upon the sexual organs and their function. On the basis of these experiments several authors (K. Sand (1922), Benjamin (1922), Schmidt (1922), K. Walker and J. Lumsden Cook (1924) and others) in recent years have employed Steinach's operation on human subjects. Many senile patients were among those treated. The conclusion which may be drawn from all these observations is stated by Walker and Lumsden Cook as follows:—

> "At the present there is insufficient material on which to base a decision as to the value of vasoligature as a means of treatment in man. The results of operation appear to have been capricious, although numerous cases are reported in which benefits accrued."

The observations of Voronoff (1920), Stanley (1922), Thorek (1924), Nixon (1924), and Walker (1924) have shown some beneficial effects after the transplantation of the testes of animals or men into patients suffering from senility or other diseases with signs of eunuchoidism. Usually this improvement, when in senile patients, was shown by an increase in appetite and in mental and muscular strength and the disappearance of constipation.

The rôle of the sexual glands in infectious diseases and in intoxications has been very little investigated. Vincenzo and Marcozzi (quoted by Poncet and Leriche), working on animals, obtained a sclerosis of the testicles in experimental tuberculosis and in poisoning with tuberculin. Ancel and Bouin (1905), on the basis of their experiments, conclude that hypertrophy of the interstitial gland of the testicle is seen in the first stages of infection and of intoxication (tuberculosis toxin included). In cases of very acute or chronic and severe infections (tuberculosis) or intoxications, the interstitial testicular glands tend to atrophy. Davis (1922) found the testicles degenerated in various infectious diseases in man. Hansemann (1895) noticed a marked increase in the number of interstitial cells in many cachectic conditions, and quite regularly in chronic tuberculosis, cancer, and syphilis. Poncet and Leriche draw attention to the degeneration of the sexual glands in human tuberculosis. They think that tuberculosis results in a slow castration produced by the tuberculosis toxin. Poncet and Leriche, Hollos (1914), Pierry (1910), Costa (1905) and others have often seen symptoms in tuberculosis denoting disturbances in the internal secretion of the reproductive glands. Sexual maturity either develops too early or there is a state of infantilism with a hypoplasia of the reproductive organs. The specific habitus (long thin limbs with undeveloped muscles) of a consumptive is, according to Poncet and Leriche, due to disturbances in the function of the interstitial glands. Disturbances in menstruation are also a frequent symptom of tuberculosis.

Cristofaletti and Thaler (quoted by Warnekros) tried to discover the rôle of the sexual glands in the resistance of the animal to tuberculosis by experiments with castration. But they did not find any marked difference in the time the castrated and normal guinea-pigs survived when infected with tuberculosis. Neither did the post-mortem examination give sufficient evidence that castration had any influence upon the development of tuberculosis. Warnekros, however, objects strongly to these experiments because they are performed on unsuitable animals; guinea-pigs being too highly sensitive to tuberculosis and surviving too short a time. At present, opinion is not agreed upon the effect of total hysterectomy with castration on tuberculosis in pregnancy. The aim of this operation is to lower the metabolism and produce fattening.

Henkal (quoted by Warnekros) noticed the beneficial effect of castration (total hysterectomy) in eight pregnant women suffering from tuberculosis. Warnekros (1912) also published his own observations on the effect of total hysterectomy on tuberculosis in pregnancy. Out of 34 cases 7 died during the first and beginning of the second year after the operation. Improvements were noticed in all the other patients; they felt stronger, increased in weight (sometimes only temporarily), and the local symptoms in the lungs disappeared or greatly diminished. Warnekros found an improvement in all the symptoms, diagnosed by auscultation, percussion, and X ray. However, the results of the operations by Henkal and Warnekros might be better explained by the interruption of pregnancy, because it is very improbable that normal secretion of the stimulating gland is of any use and even harmful in an infection. Moreover, a histological examination of the sexual glands in chronic tuberculosis reveals frequent degenerative and atrophic processes in them; hypertrophy of the interstitial gland was found only in the early stages of tuberculosis or in mild forms of the disease. Therefore, it is possible to consider the more frequent lowered activity of the sexual glands in tuberculosis, which, Poncet and Leriche say, finally "castrates" the patient by means of tubercle toxins. In spite of this "toxic castration" consumption is not cured or even ameliorated. In the time of Brown-Séquard an attempt was made to treat consumptive patients with "testicular liquid," and some satisfactory results were obtained. The general well-being and strength as well as the local symptoms of the patients showed varying degrees of improvement (Victorov (1891), Maximovich (1891), Henocque (1892), Ouspensky (1896)).

Technique Employed in Present Investigation.

When all the above-mentioned facts were considered it seemed promising to administer preparations of sexual glands + adrenals to tuberculous patients with symptoms of deficiency of internal secretion of sexual or adrenal glands to enable them to overcome this disease. It is obvious that all the operative methods used to provide the patient with the necessary internal secretions of the sexual glands have many limitations. Therefore, it is most desirable to discover a suitable and effective preparation for oral or subcutaneous administration. Since the first observations of Brown-Séquard (1889) on himself, many kinds of testicular and ovarian preparations have been used for the treatment of patients. For general practice, firms of to-day offer a variety of such preparations for oral as well as for subcutaneous administration.

But the results obtained with these are contradictory, and differ much from those described by Brown-Séquard (see Biedl). For subcutaneous injection, the founder of organotherapy used freshly prepared extracts of testes in water and glycerine solutions. These extracts contain an excess of destroyed cell products which produce an unfavourable local and generalised reaction in the patient. Therefore, commercial firms stopped preparing them and replaced them by harmless, but at the same time much less active or sometimes even inactive preparations. Most of them are prepared either by desiccation of the gland tissue (for oral administration), or by precipitation of the proteins and sterilisation of a watery extract of the gland (for subcutaneous injection). Although some improvements in patients after using these preparations are described (Biedl), it is impossible to avoid the objection that the procedure necessary for desiccation, precipitation of proteins, and sterilisation of glandular preparations may destroy or weaken the active principles of the sexual glands. I therefore decided to try a glycerine emulsion for oral administration prepared from perfectly fresh glands. A possible objection to this is that the active principle of glands could be destroyed by the autolysis, which could take place in a glycerine solution. This I tried to avoid by preparing the emulsions very often and by keeping them cold. The method of preparation was as follows.

Testes and adrenals from cattle were used. The glands were brought straight to the laboratory immediately after the animal was killed. They were ground in a "Latapie broyeur" (large model) and emulsified in glycerine in the proportion of 1 part of gland to 2½ parts of glycerine. One part of ground tissue contained 1/8–1/10 adrenals and 7/8–9/10 testes. For therapeutic treatment ½–2 teaspoonfuls were given once or twice daily according to the reaction of the patient.

I have tried this extract on myself for several weeks and have not noticed any harmful effects. In the following text the glycerine emulsion of testes and adrenals will be called "A.T. Emulsion." At first my aim was to administer the A.T. emulsion only to those patients who suffered from tuberculosis with symptoms of deficiency chiefly of sexual glands. But it was difficult to find a sufficient number of suitable cases in hospitals because marked changes in the external appearance can only be seen in those in which deficiency started at an early age. I therefore decided to try the effect of A.T. emulsion also on patients without obvious signs of sexual deficiency.

The above-mentioned treatment of the patients was kindly carried out and the results obtained checked by Dr. M. Paterson, medical superintendent of Colindale Hospital, with the assistance of Dr. M. H. Logg, on 50 patients in Colindale Hospital; by Dr. F. B. Hobbs and Dr. A. I. McLaughlin on 11 patients in the City of London Hospital; by Dr. J. Watt, medical superintendent of the King George V. Sanatorium on three patients; by Dr. M. McDonald on one patient in the Tuberculosis Dispensary of Greenwich; and by Dr. R. C. Wingfield, medical superintendent of the Brompton Hospital Sanatorium at Frimley, on five patients. The treatment of the senile patients was kindly undertaken by Dr. J. A. Lumsden Cook at St. Mary Abbots Hospital.

I was permitted to choose the most suitable patients, to suggest the dosage of the emulsion, and during my visits to the hospitals to follow the results obtained. My sincere thanks are due to my colleagues for their accurate and elaborate observations and for permission to use extracts from their reports for the following short summary.

Observations on Tuberculous Patients.

Colindale Hospital.—50 patients, 17 of whom have some features of deficiency of sexual glands. Out of 12 patients with *medium advanced* disease two were between 18 and 21 years old and ten between 27 and 45. The treatment with emulsion lasted 20–35 days for five patients, 41–60 days for three patients, and 80–112 days for four patients. The dose of A.T. emulsion was 1–2 drachms daily.

The condition of the patients at the end of the treatment was as follows. Improvement in four patients, stationary condition of disease in four patients, and another four patients became worse, three of whom died. In a *definitely advanced* stage of tuberculosis were 19 patients: five were 18–25 years old, ten were 26–40, and four were 41–61. The treatment with the same dose of A.T. emulsion lasted: 20–40 days for six patients, 41–65 days for two patients, and 80–145 days for 11 patients. At the end of the treatment their condition was as follows. Six patients improved, six remained stationary, and seven became worse, three of whom died. In a *very advanced stage* of tuberculosis were 19 patients. Five were between 17 and 25, 11 between 26 and 40, and three between 41 and 44 years old. The treatment (the same dose) lasted: 4–14 days for seven patients, 21–40 days for four patients, 41–60 days for four patients, and 61–110 days for four patients. Their condition at the end of the treatment was as follows. One patient improved, three remained stationary, and 15 became worse, ten of whom died. Seven patients, from whom no conclusions can be drawn, must be excluded, because they were only under treatment for 4–14 days; six of them died during this time.

It is impossible to conclude that there are any constant or definite beneficial effects of A.T. emulsion on tuberculous patients from the observations made in Colindale Hospital. The improvement in nearly all cases could be explained by the sanatorium régime The improvement found in some cases which could be associated with administration of the extract was of a temporary character. In some patients ingestion of the emulsion produced headaches or sickness.

City of London Hospital.—Eleven patients were treated, detailed records of eight of whom are available. They were between the ages of 17 and 26. Treatment of four patients lasted 17–29 days and of the other four 40–70 days. Four patients were in a medium advanced stage of the disease, three definitely advanced, and one very advanced. At the end of the treatment the condition of disease had improved in four patients, remained stationary in three, and became worse in one, who died.

Of the four who showed improvement one is definitely attributable to the emulsion. Therefore, as this case is typical, I will quote Dr. McLaughlin's original report. "Patient was admitted on Sept. 3rd, 1923, and he had signs of considerable tuberculous disease with cavitation of the upper lobe of the left lung, also his right upper lobe was affected. There was considerable activity, his pulse-rate varying from 104–130, the temperature from 101–97·6°, and his sputum 1 oz. in 24 hours; tubercle bacilli were found in the sputum; his weight on admission was 7 st. 8 lb. 10 oz. He exhibited the typical signs characteristic of imperfect testicular development, and he shaved once a week. During the first three weeks of his stay his condition had not varied much and he increased 2 lb. in weight. During the next three weeks his temperature remained on a lower level and his pulse-rate continued to be rapid and he lost 1½ lb. in weight. Seven weeks after his admission he was put on the A.T. emulsion and his weight immediately started to increase; in a fortnight he had gained 5 lb., and he experienced a remarkable feeling of well-being, and in two months he gained 6 lb. and was obliged to shave three times a week. His pulse-rate was considerably slower and varied from 85–95. After two months the A.T. emulsion was stopped and although the patient felt well in three weeks he had lost 4 lb. He has now been transferred to a sanatorium under the Essex County Council." No signs of any negative influence of the emulsion were observed in the City of London Hospital.

King George V. Sanatorium and Greenwich Tuberculosis Dispensary.—These patients have some features of eunuchoidism—long thin limbs, small penis and testes, slow hair growth, high voice, and in two decreased sexual desire. The pulmonary tuberculosis was in a medium advanced stage in three cases and extensive in one case. The age of three patients varied between 17 and 22 years and the fourth patient was 40. In one case the treatment lasted 75 days, and in the other three patients for 125–150 days. The dosage of the emulsion was as mentioned above. At the end of the treatment two showed moderate improvement, one temporary improvement, and one, with extensive tuberculosis, remained stationary. In these cases the improvement could not be ascribed to the emulsion treatment only, but to the sanatorium régime as well. But there were definite changes in the sexual features of three patients due to the influence of the A.T. emulsion. The hair of all three patients began to grow more quickly, one patient's high voice broke, the small and soft testes of another became harder, and sexual desire was increased in two patients. No signs of any negative influence of the emulsion were observed.

Brompton Hospital Sanatorium at Frimley.—Five patients were put on A.T. emulsion, but in three cases the treatment was discontinued after a few days. In one patient it seemed to increase the attacks of pain due to intestinal ulceration, in another nervousness was apparently increased, and the third patient complained of indigestion. The two remaining patients, one with extensive, the other with slight tuberculosis, were treated for four weeks. Subjectively the patients expressed the opinion that they felt better and more energetic, but there were no signs of objective changes in the disease. The disease spread rapidly to the other lung in one patient in spite of the fact that he felt better.

Results in Tuberculous Patients.

From the results obtained from all the above-mentioned hospitals the conclusions are: 1. The ingestion of a glycerine emulsion of testes and adrenals did not improve pulmonary tuberculosis in a definite and constant way. 2. In those patients, whose improvement was probably and in one case (quoted above from Dr. McLaughlin's report) was certainly due to the emulsion, the change was only temporary. 3. By this treatment in some cases of eunuchoidism symptoms of a deficiency of the internal secretion of the sexual glands were slightly improved.

Observations on Senile Patients.

Fourteen patients were put on the A.T. emulsion treatment. Their ages varied from 64 to 94. There was also one aged 45 who showed signs of precocious senility. The duration of the treatment was 3–5 months. The emulsion was given once or twice, one half to two teaspoonfuls daily. Six patients died from different accidental diseases or from senility during the period of observation. The patients were thoroughly examined several times before, during, and after treatment by Dr. Lumsden Cook. Psychological and dynamometer muscular tests were performed before and at the end of the treatment on the six treated patients as well as on the 10 controls by Dr. C. M. Davey and Dr. T. Gourland, under the kind direction of Prof. C. E. Spearman. I wish to express my sincere gratitude to my colleagues for their kindness in undertaking this elaborate work and for permission to make extracts from their reports for this communication.

With the kind permission of Dr. Lumsden Cook I followed the results obtained on the above-mentioned patients during the whole time they were under observation.

General observation of the patients treated with A.T. emulsion did not reveal any considerable change in their condition.

Two types of *psychological tests* were used, those testing (1) general intelligence, and (2) memory and memory association. As most of the patients could neither read nor write, the first type consisted of classification tests, analogies, sequence, completion, and Binet's memory-drawing test. The memory tests were pictorial and consisted of a series of pairs of well-known objects. After the patient had been shown the first half of the series he was asked to give the names of any he could remember. He was then shown one picture of the pair and asked to name its companion. The second half of the series was then given in the same way, and finally the patient was asked to name as many objects as he could of the whole series. A second series of different pictures was given two months later (at the end of the treatment).

The results obtained in the tests of *general intelligence* of 10 control seniles:—

Total number of questions when tested—

First time.			Two months later.		
Right.	Wrong.	Omitted.	Right.	Wrong.	Omitted.
184	95	21	177	85	38

From these results it can be seen that the correlation between the two sets of tests is to be relied on and that the second has not proved to be easier than the first. If, then, there should be any appreciable difference in the results of these tests when applied to other seniles before and after treatment it may be legitimately concluded that this difference was not due to the inefficiency of the test as a measure, but to an improvement or decline in the general intelligence of the patients treated.

The results obtained with six patients treated with A.T. emulsion were as follows:—

Total number of questions—

Before treatment.			After treatment.		
Right.	Wrong.	Omitted.	Right.	Wrong.	Omitted.
80	73	27	95	61	24

Comparing these results with those of the control seniles it may be concluded that the seniles after the treatment with emulsion have shown a slight general improvement.

Memory Tests.—In the control group of patients total number of questions right for:—

During first test.		Two months later.	
Memory.	Association.	Memory.	Association.
125	27	103	17

In the patients treated with A.T. emulsion:—

During first test.		Two months after treatment.	
Memory.	Association.	Memory.	Association.
80	26	111	28

The memory tests show the same results as the intelligence tests—namely, the control seniles appear to be going slightly downhill (especially those who are very aged) and the treated seniles after treatment have shown a decided improvement.

Dynamometer Muscular Tests.—A Cheron and Verdin dynamograph was used for the tests and the following figures are those indicated on its scale during the pressure on the knob of the apparatus by the patient's hand. The following table gives the average results for each hand of six seniles before and after treatment with A.T. emulsion:—

No.	First test.		Second test.	
	Right hand.	Left hand.	Right hand.	Left hand.
1	37·2	35·0	42·0	45·2
2	30·2	20·4	32·0	25·4
3	30·0	24·6	24·8	24·0
4	22·2	22·4	25·0	26·0
5	12·2	8·4	13·2	9·0
6	31·8	31·4	31·2	29·2

In this test patient No. 1 has shown a definite improvement, Nos. 2 and 4 slight improvement, Nos. 5 and 6 practically no change; the right hand of No. 3 has lost some force.

Results in Senile Patients.

It is possible to conclude from all the observations made on senile patients that: 1. The ingestion of a glycerine emulsion of testes and adrenals has only produced a slight improvement in their general intelligence and memory and in some patients in their muscular strength. 2. Comparing the results obtained in senile patients under the above treatment with those obtained by Brown-Séquard's subcutaneous injections, by Steinach's vasectomy, and by transplantation of testes, it is clear that the method—i.e., by the mouth, but not the idea of the special organotherapy—is of no great value.

General Conclusion.

Observations made on 70 tuberculous patients and 14 seniles indicate practically no efficiency in the method of oral administration of preparations of testes and adrenals.

The grant of the Medical Research Council and the hospitality of the laboratories of the Lister Institute have enabled me to carry out this work and to them my thanks are due. I wish also to express my sincere gratitude to Prof. C. J. Martin for his continuous support of this investigation.

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MYOMECTOMY AS THE TREATMENT OF ELECTION FOR UTERINE FIBROIDS.*

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THREE years ago I read a paper before this Section [1] in which I described the results of a consecutive series of 100 myomectomies, and as the outcome of that experience urged a more extensive adoption of the operation so as to include in its scope many of the cases of fibroids commonly dealt with by hysterectomy. Since that publication, and in consonance with it, I have continued the practice of the operation on an increasingly wide scale, so that in three years I have accomplished a further series of 120, the results of which I now report with the object of showing that the main thesis of my previous paper—namely, that in a large proportion of cases of fibroids the uterus can and should be conserved, is sound. So much, indeed, have my views of three years ago strengthened that in my present title I describe myomectomy as the treatment of election for uterine fibroids. I do not mean to imply by that that myomectomy should ever entirely supersede hysterectomy, for no matter how expert we may become at the former operation, and in spite of results far surpassing those obtained up to now, there will always be a certain number of cases in which removal of the uterus is indicated because, apart from the fibroids, it itself is diseased. What I am endeavouring to convey is that conservation of the uterus should be the ideal to be aimed at by the surgeon whenever the organ, apart from the tumours, is reasonably healthy, as it is in the major proportion of the cases. For the compassing of this end two things are necessary, the surgeon must make himself expert in the operation, and the patient must be sent to him before she is so bloodless that it is imperative to stop the periods altogether.

Objections to Myomectomy.

The objections that have been raised against this extension of the scope of the operation are mainly these: (1) that it is often a more dangerous procedure than hysterectomy; (2) that there is considerable likelihood of more fibroids developing; (3) that where menorrhagia is the outstanding symptom it may persist in spite of the removal of the tumours; and (4) that the conserved organ is so damaged that it is functionally useless.

I hope to convince you that none of these objections can be maintained. My new series of 120 operations represents an average of 40 myomectomies performed yearly, so that the patients have not been cautiously selected. I have, in fact, performed the operation in every case in which I felt that conservation of the uterus would be a boon to the woman, irrespective of the number or the position of the fibroids in the uterus.

Number of Tumours Removed.

No of fibroids removed at each operation.	No. of operations. New series.	No. of operations. Old series.	No. of fibroids removed at each operation.	No. of operations. New series.	No. of operations. Old series.
1	47	(*49*)	15	4	(*1*)
2	9	(*10*)	17	1	(*1*)
3	12	(*10*)	19	1	—
4	8	(*5*)	21	1	(*1*)
5	8	(*6*)	22	1	—
6	6	(*2*)	24	1	—
7	4	(*2*)	25	1	—
8	1	(*4*)	26	1	—
9	2	(*1*)	30	—	(*1*)
10	4	(*2*)	52	1	—
11	1	(*1*)	80	1	—
12	4	—			
14	1	(*4*)		120	100

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* Read before the Section of Obstetrics and Gynæcology of the Royal Society of Medicine on Nov. 5th, 1925.

[1] THE LANCET, 1922, ii., 745; Jour. of Obstet. and Gynæcol., 1922, xxix., No. 4.

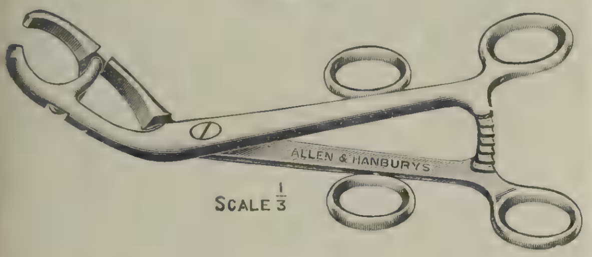
In the above table I have set out the number of tumours removed at each operation. The figures in brackets are the corresponding figures from my old series.

The myomectomy, therefore, was "single" in 47 cases and "multiple" in 73 cases of the new series, and the greatest number of tumours removed from the uterus at one operation was 80.

Technique.

The successful removal of so large a number has been rendered possible by the use of the clamp invented by me (Fig. 1).[2] It acts as a tourniquet applied to the lower uterine segment and controls both uterine arteries at once, so that when the ovarian vessels are temporarily compressed by a ring forceps on either ovario-pelvic ligament the circulation through the uterus is entirely stopped, and the operation becomes bloodless. This is an immense gain, for it not only renders many myomectomies possible which previously were impossible, but in all these operations it permits the surgeon to proceed with the enucleation and subsequent reconstruction of the uterus unhampered and unhurried by the constant oozing of blood which was the chief difficulty previously. The clamp is applied from the front through the lower end of the abdominal wound, and *it is important to put it in so that both round ligaments are included in its grasp*, for otherwise it may slip down the cervix below the point where the uterine arteries enter the uterus. As the enucleation is proceeded with and the uterus shrinks it may need tightening up a notch or two, or even readjusting, and in cases where the supravaginal cervix contains a fibroid this must be enucleated before the clamp is applied. It should not be taken off until the uterus is completely sutured. On its removal the organ temporarily flushes up just as a limb does after a tourniquet is removed and some oozing may start from the suture holes. This usually stops as the flush subsides, but any point that persistently bleeds must be underrun with a mattress suture.

FIG. 1.



As regards the general technique of the operation I have little to add to what I previously described. I continue to remove all the tumours if possible through a single anterior incision in the uterus, and afterwards in many cases either ventrofix the uterine incision, or shorten the round ligaments, or bring a flap of the loose peritoneum covering the lower uterine segment up to the top of the anterior surface of the uterus, like Pesalozza's operation for retroversion. The object of all these manœuvres is to prevent intestine adhering to the sutured uterus. The various devices which I described and illustrated [3] for getting access to fibroids in the back wall of the uterus and for closing the enucleation cavities have all continued to prove of value. The "hood" operation for large posterior fibroids has been most satisfactory, and a good many of the present series have been carried out that way. I also frequently employ the "transcavity" route for posterior tumours. Opening the uterine cavity has not been followed by any ill-results and I do it in most of the operations to prevent small submucous tumours being overlooked. In the closure of the major enucleation cavities and in reconstructing the uterus I employ silk for the main mattress sutures because I believe it to be the safest. Too rapid absorption of catgut leads to opening up of the cavity it closes and bleeding occurs into the space. This is dangerous, for the hæmatoma may become infected. For sutures of lesser importance I use catgut.

Objections to the Extended Operation.

Dealing now with the various objections that have been raised against the extended operation :—

Risk as Compared with Hysterectomy.—There were three deaths in this series of 120 operations. Two of the deaths were due to that baffling condition, paretic obstruction of the intestine. Both these patients were elderly women, and the object of conserving the uterus was the same in each case—viz. to ventrofix it and make it act as an artificial ligament to hold up a prolapsed vaginal vault. Neither myomectomy was "large," either in the sense of its difficulty or of a large number of tumours removed. One of the patients had the abdomen reopened before death, and a post-mortem examination was made on the other. In neither case was there found any obvious cause for the intestinal paresis and distension. The disaster may happen after hysterectomy or any other abdominal operation, and in the present instances cannot be attributed to the fact that myomectomy preceded it any more than another operation. The third death was due to pulmonary embolism, which occurred in the third week of what, up to then, had been a perfect convalescence. In my earlier series of 100 operations I had two deaths, one due to post-operative hæmorrhage discovered too late, and one due to peritonitis, secondary to post-operative oozing from the uterine wound. Both these deaths were directly dependent on the myomectomy as such.

There were thus five deaths in 220 operations—an operative mortality of 2·09 per cent. Though series of 100 or more consecutive hysterectomies for fibroids without a death have been recorded a good many times, yet the general mortality of this operation is not so low as these happy runs of luck would suggest. Taking hospital practice all round the mortality of hysterectomies for fibroids, when carried out by surgeons expert in that operation, is probably about the same as I have quoted for myomectomy. Myomectomy at present requires on the average a higher degree of skill than hysterectomy, but as practised on a wholesale scale it is a newer operation, and like all operative innovations presents difficulties which the experience accruing from increasingly widespread adoption will circumvent or do away with. Thirty years ago every hysterectomy bristled with difficulties; nowadays only a very small proportion of these operations extend a trained gynæcological surgeon. Convalescence after myomectomy is usually smooth, but on the average, as compared with hysterectomy, there is more pyrexia in the first week, due probably to absorption from the enucleation cavities. I have not had any trouble from the silk sutures in the uterus.

Recurrence of Fibroids.—Turning to the second objection that new fibroids are likely to develop in the conserved uterus, I have no hesitation in calling it an unsubstantial bogy, provided the operation is performed so that every tumour down to the smallest seedling is removed. Two of my earliest cases exhibited nodules the size of marbles some years after their operation, but they were performed at a time when I was not thorough in searching for and removing every seedling. I am unaware of any others. This freedom from recurrence has indeed surprised me, and led me to recast my opinion on the age of genesis of these tumours. I believe now that the seedling is, as a rule, formed much earlier in life than has been hitherto believed, probably in the 'twenties, and that the formative agent, whatever it is, is not operative continuously but ceases to act after a period.

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[2] Described in Jour. of Obstet. and Gynæcol., 1923, xxx., No. 3.

[3] Jour. of Obstet. and Gynæcol., 1922, xxix., No. 4.

Persistence of Menorrhagia.—The third objection that menorrhagia may persist in spite of the removal of the tumours is equally untenable. I have never yet had to operate on any of my patients for continuance or reappearance of excessive bleeding. Where the uterus is greatly hypertrophied from clothing a large fibroid or mass of fibroids it is necessary to cut it down to a manageable size before returning it to the abdomen, for though involution occurs after myomectomy, as after parturition, it is unsafe to trust too much to that. The uterus when sutured should, however, be a little bigger than normal, otherwise, when involution is complete, it will be abnormally small. In such a case the first period or two after the operation will be freer than normal, but decreasingly so as involution proceeds, until the normal is attained.

Function of the Conserved Uterus.—The fourth objection that the uterus from which a number of fibroids has been removed is functionally useless is also fantastic. To my knowledge, a number of my patients have subsequently conceived. Natural delivery is possible even after many tumours have been removed. In my previous paper on the subject I recorded such a delivery after I had enucleated 21, and quite recently Fletcher Shaw published a similar case from whom he had previously enucleated 23.[4] There is probably no tissue in the whole body that heals so perfectly as uterine muscle. I have examined many of my patients a year or more after the operation, and used to be surprised how healthy the uterus felt, but I am getting accustomed to that. Several times I have had the opportunity of inspecting the conserved organ through an abdominal incision, and its appearance confirmed the impression of normality given by previous bimanual examination. Lastly, on two occasions I have tested the tubes by inflation some years subsequent to myomectomy and in both patients they were patent. From one of these women I had removed 17 fibroids. Menstruation a year from the operation has invariably become natural in periodicity and amount, and in those cases in which the fibroids were accompanied by dysmenorrhœa their removal was followed by immediate disappearance of the pain. There is a well-marked class of case in which quite small fibroids in the uterus give rise to very severe monthly pain without other symptoms, and in such the results of myomectomy are most gratifying.

The Uterus in Relation to Ovarian Activity.

There remains to speak of a further function of the uterus—namely, its influence in maintaining ovarian activity, a function which, being lost as the result of removing the organ, is followed by climacteric symptoms due to ovarian atrophy some years earlier than would have happened if the uterus had not been removed. This function is preserved by myomectomy.

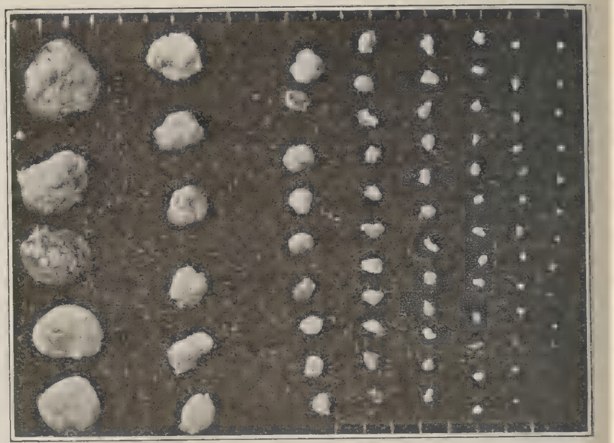
The idea then that the conserved organ will probably be an incubus to its possessor on account of hæmorrhage, discharge, or pain may be dismissed as an example of that unsafe habit of theorising without founding the theory on practical experience which more or less besets all of us.

Clinical Illustrations.

Let me finally record some of the achievements which myomectomy makes possible.

The largest number of fibroids that I have as yet enucleated at a single operation is 80. This patient was an unmarried woman aged 35. She was engaged to be married and was sent to me with the express purpose of having her uterus saved if it was possible. The abdominal tumour was the size of an eight months' pregnancy and was so symmetrical that I thought it probably was composed of a very large solitary fibroid, with perhaps one or two smaller ones. On opening the abdomen it proved to be the great congeries of tumours shown in the photograph (Fig. 2), which were impartially distributed in the front, back, and side walls of the uterus. I was able to enucleate all these with a very small loss of blood, thanks to the myomectomy clamp I have described, and I reconstructed the uterus so that there is no obvious reason why when she marries she should not conceive.

FIG. 2.



Eighty fibroids enucleated from a uterus at a single operation. Each division of the scale represents an inch.

A year ago I had a very remarkable case of an unmarried girl of 24 with a huge mass of fibroids.[5] I enucleated these to the number of 52, and a week or two since she came up at my request to be examined. The uterus felt absolutely normal, and her periods, which ceased entirely for three months after the operation, are now regular in onset and natural in duration and quantity.

Another unmarried girl of 22 was sent to me with an abdominal tumour the size of a seven months' pregnancy. It turned out to be a solitary submucous fibroid of the posterior wall which, when enucleated, weighed 5 lb. It had undergone nævoid degeneration and was excessively vascular. This was a case which some years ago I should certainly have treated by hysterectomy to the girl's lasting disadvantage and hurt. Instead I performed a "hood" operation and sent her back to her parents well and whole.

Quite recently I operated on a married woman, aged 38, six months pregnant for the first time, on account of a large mass of fibroids, one of which had undergone acute necrosis. It was necessary to begin the operation by removing the pregnancy through the uterine incision because the situation of the fibroids was such that preservation of the child was impossible. I then proceeded to enucleate the tumours to the number of 22 and, though I have removed a much larger number, these were so awkwardly placed (three of them were embedded in the posterior wall of the supravaginal cervix) that I must admit I was daunted. However, I persisted, and in the end left her with an excellent organ in which the vast chances are she will conceive again. This was a case where a child was very greatly desired both by the wife and husband.

In regard to the preservation of pregnancy complicated by fibroids which have to be operated on, it is usually possible to achieve this when the tumour is solitary or, when multiple, not present in large numbers. Seven tumours is the most I have yet been able to enucleate without disturbing a coexistent pregnancy. Where, however, a large number are present, as in this case, the pregnancy must be treated as an additional tumour and "enucleated" too.

I could give many more examples of the beneficent possibilities of the operation, but I think what I have said sufficiently justifies the title of this paper, and I hope to see the time when every surgeon called upon to operate for this condition will enter upon his task with that conception in the forefront of his mind.

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[4] Jour. of Obstet. and Gynæcol., 1925, xxxii., No. 3.

[5] Jour. of Obstet. and Gynæcol., 1925, xxxii., No. 1.

A NOTE ON

MARGOSA OIL IN THE TREATMENT OF CANCER.

By K. K. CHATTERJI, F.R.C.S. Irel.,
MAJOR, I.T.F. MEDICAL CORPS; SURGEON, MEDICAL COLLEGE HOSPITAL, CALCUTTA.

Margosa oil, obtained from the seeds of the nim or margosa tree, has in its composition saturated and unsaturated fatty acids. I commenced my investigations on the oil early in 1917 and later, in collaboration with Prof. R. N. Sen, of the University of Calcutta, the insoluble fatty acids were separated from the oil, and the nature of margosic acid—i.e., the mixed insoluble fatty acids of the margosa oil—was elucidated. On isolating the unsaturated fatty acids the neutralisation value was found to be 185·89 and the iodine value 105·28. The solid acid separated had the neutralisation value 198·12 and iodine value 12, which showed that unsaturated fatty acids were still present in very small quantities. This acid was found to be stearic acid with minute traces of unsaturated acids. The unsaturated fatty acids appeared to consist of oleic acid ($C_{18}H_{34}O_2$) and an acid belonging to the linolic acid series which Prof. Sen declared to be the characteristic fatty acid of margosa oil. $C_{22}H_{40}O_2$ has been suggested for its formula. This acid has been called margosic acid, and it is not known to have been obtained from any other oil.

It has a yellowish colour, is liquid at ordinary temperature, and possesses no optical activity. The sodium and potassium salts are soluble in water; its lead and barium salts are soluble in ether and benzene. It forms about 23 per cent. of the total fatty acids present in margosa oil. At my suggestion Prof. Sen has prepared several salts as well as ethyl ester, allyl ester, and, recently, benzyl ester from the mixed fatty acids.

The evolution of margosate therapy and the sequence of events which narrowed down the field of research and finally centred it in cancer may be interesting from the point of view of cancer research.

In the "Ayurvedas" the cleansing and healing properties of the nim for ulcers are extolled. While testing the antiparasitic and antiprotozoal action of sodium margosate, it was found that in dilute solutions it killed paramœcia, prowazekia, microfilaria, &c. The action of ethyl ester margosic was more potent. Using sodium and potassium margosate therapeutically, it was observed that effects were marked in the granulomatous stages of syphilis (late secondary and tertiary stages), for tuberculous glands and ulcers, in leprosy, and in some varieties of diseases of the skin. As the effect of margosate treatment was rather striking in clearing up the granulomatous conditions, its use was extended to tropical granulomata.

Sodium Margosate, Potassium Margosate, and Ethyl Ester Margosic.

At first I used two of the more soluble salts of margosic acid, sodium and potassium margosates; 2 to 3 gr. (4 per cent. solution) were given. Intramuscular injections caused some local irritation, and intravenous injections caused obstruction in the veins after a few doses.

Ethyl ester margosic is a clear reddish fluid with a fruity aromatic odour and a high boiling-point. It is insoluble in water, but soluble in ether, alcohol, and chloroform. I soon gave up sodium and potassium margosate and brought ethyl ester margosic into use, as I found it superior even to the potassium salt. Ethyl ester does not cause local irritation or irritation to the veins and has no hæmolytic properties. Its margosic content is higher than the salts, and much more so per volume compared to the 4 per cent. solution of the salts that could be used. Being in loose chemical combination it is hydrolysed more readily. Its antiparasitic and bactericidal properties are definitely higher. It seems to influence fat metabolism remarkably, as can be observed from the results obtained from its use in some conditions due to filarial infection.

On testing the blood of many of these patients it was found that there was a variable deficiency in calcium salts in some granulomatous cases, but this deficiency was markedly constant in cancer patients; as a matter of fact, a definite calcium deficiency caused some suspicions of malignancy in cases of granulomatous growths. It is known that the potassium content of the blood of cancerous individuals is above normal, and while calcium has an inhibitive influence on the growth of cancer, potassium acts favourably. In view of these, I gave up the use of potassium margosate and introduced ethyl ester margosic. I gave calcium and parathyroid extract to some of my patients, and I have an idea that improvement was more marked in them.

Ethyl Esters.

Ethyl esters of various oils were prepared, such as cod-liver oil, olive oil, "til" oil, chaulmoogra oil, &c., and a comparative study was made. The ethyl ester of pure margosic acid seemed to have the greatest efficacy; the other oil which approached it in other respects was olive oil. Esters of animal fats and oils were not as effective.

Copper Margosate.

My experiments show that E.E. Cu-margosate has a strong inhibitive effect on the growth of fungi, protozoa, cocci, and other organisms, and that when used therapeutically in the form of local or intravenous injections it induces fibrosis and encourages epitheliation of granulating surfaces. Copper is carried to the tissues with the fatty acid elements; and there is some evidence that copper, like calcium, is attracted to the tissues in which rapid cell division is in progress. The fat and copper in the E.E. Cu-margosate is transported to the tissues, and much is attracted by the rapidly multiplying cells of cancer. Copper gives rise to the formation of fibrous tissue. thus causing barriers and obstructions to the growth of cancer. If the infective origin of cancer is to be taken into account we know that copper has strong antiprotozoal and antibacterial properties, and healthy granulation tissue, fibrosis, and epitheliation follow the elimination of the infective element. In some cases treatment with E.E. Cu-margosate has cleared up the growth and removed all evidences of malignancy. In others this treatment has been supplemented by irradiation by X rays, and in almost all instances it has expedited the process. In my opinion, which I must admit is not based on a very large experience, radiotherapy is indicated for the improvement of local and general metabolism and in order to stimulate lymphocyte activity and fibrosis. The idea of producing caustic or destructive effects on the cells to any great extent by X rays has not appealed to me. In Case 3, epidermoid carcinoma of the leg near the ankle with greatly enlarged femoral and inguinal lymph glands, this combined treatment of the ulcer in the leg and one or two exposures of the glands practically led to their absorption. When the remains of these glands were removed and examined no signs of malignancy were found. This suggests the production of immunising substances, and a heavy dose of exposure like an overdose of vaccine is hardly desirable in a case of cancer. The work of destruction and disposal of the cells could reasonably be trusted to copper and margosate treatment aided by the more desirable therapeutic action of X rays. The action of copper with margosic ester has been shortly described. Minute particles of copper are deposited throughout the neoplastic tissue. It may reasonably be presumed that irradiation of such growths has dual therapeutic effects. The direct action of the X rays accentuates the histological changes produced by copper and the fatty acids, and the rays impinging on the minute particles of copper give it radio-activity and produce a number of small secondary rays in the tissues; the therapeutic effect of the rays is continued and the tissues are kept for a longer period under the influence of these rays than they would be by other methods of irradiation. Ulcers and tumours have been treated by copper ionisation and then irradiated, but it was thought that, as ionised copper is mostly deposited on the surface, they would act as filters. In this case, on the other hand, the particles of copper being dispersed deeper in the tissues, the primary rays impinging on them would be reflected from them as secondary rays and be absorbed by the tissues. The ideal rays would, therefore, be those obtained from a source giving rays which would have the above-mentioned therapeutic properties without producing lethal effects on the tissues.

Clinical Histories.

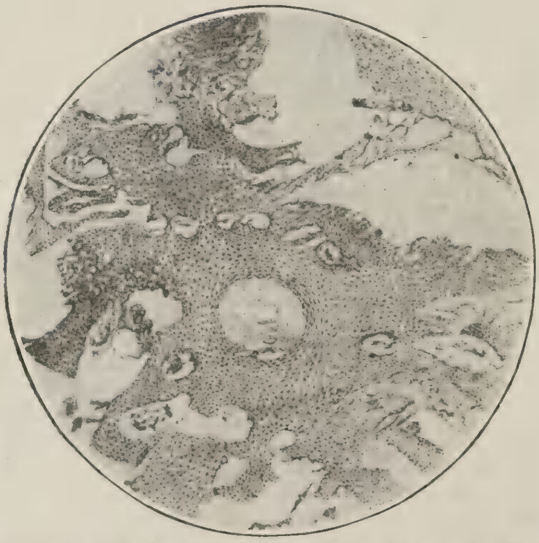
I give here summarised reports of three cases of cancer treated.

CASE 1.—Hindu, male, 26 years. Admitted under my charge in the Campbell Hospital in March, 1922, and transferred to the Medical College Hospital in August, 1923, for a fungating ulcer with foul discharge, and unhealthy granulations involving the anus and perianal area, the whole of the perineum, and the scrotum laterally and in front. The inguinal glands were hard and enlarged. There was much pain, defæcation being particularly painful. The patient had lost weight and was cachectic. Wassermann reaction was negative. A provisional diagnosis of anorectal granuloma tropicum was made.

Treatment.—A piece was excised from the growing margin and sent for pathological examination, and treatment commenced. Fifty-eight injections of E.E. Cu-margosate were given locally and intravenously and intramuscularly. During treatment the following changes were noticed: the general appearance of the granulations was healthier, discharge, discomfort, and pain were reduced, defæcation was easier, evidence of cicatrisation and epitheliation.

First pathological report (before commencing treatment)—"squamous epithelioma" (Fig. 1). As much improvement was noticed with the above treatment it was persisted in, particularly as the end-result of operation was not very bright. Second pathological report after 25 injections: "Epithelioma showing dense leucocytic infiltration between epithelial spaces." Third pathological report after 46 injections: "Under the epithelium a mass of granulation tissue extends deep into the corium. There is no evidence of malignancy" (Fig. 2). By this time processes of cicatrisation and epitheliation had extended from the periphery across the growth towards the anus. After 58 injections the ulcer had completely healed. The surface was covered with cicatricial tissue and epithelium; pigmentation of this surface was in progress. This patient was not treated by radiations.

FIG. 1.

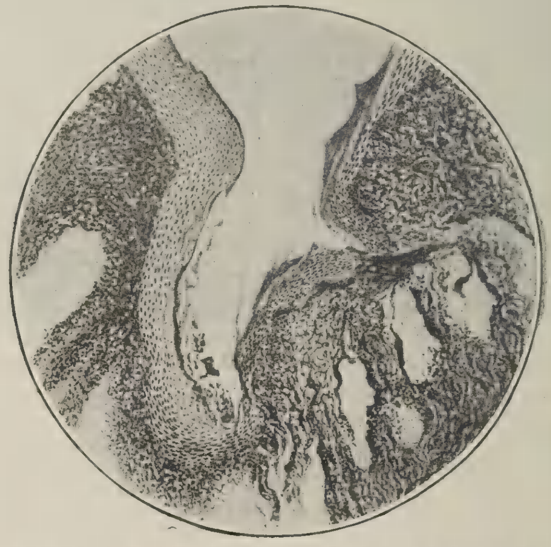


Microphotograph of section of growth before treatment. Pathological report: "Squamous epithelioma."

CASE 2.—Hindu, male, 19 years. Admitted under my charge in the Campbell Hospital in June, 1922, and transferred to my wards in the Medical College Hospital in August, 1923, for a large fungating tumour with a foul discharge in the right parotid region. He was very anæmic, with hæmoglobin content of blood 40 per cent., general condition bad, and a low blood pressure. The tumour was 10 inches in circumference and extended to the angle of the jaw below and displacing the ear backwards (Fig. 3, A). The patient did not consent to operation and it was not pressed because of his bad health.

Treatment.—A piece was removed from the margin of the growth for pathological examination. From June, 1922, till August, 1923, he was put on calcium chloride occasionally, and doses of parathyroid extract. E.E. margosic and E.E. Cu-margosate injections were given locally into the growth and intraglutecally. He also had 24 radiations by X rays. As a result his general condition much improved, and the hæmoglobin value of his blood rose to 80 per cent. The tumour became much smaller and cleaner, there being only a slight serous discharge; cicatrisation and epitheliation were encroaching from the periphery towards the centre of the surface. An attempt was now made to excise the growth with only partial success as it was firmly fixed to the jaw and adjoining structures. The excised portion was sent for pathological examination and the report awaited before deciding on further operation. As this was rather satisfactory, and the raw surface rapidly became covered with epithelium, any idea of further operation was abandoned. The patient continued to improve, no signs of recurrence in May, 1925 (Fig. 3, B).

FIG. 2.



Microphotograph of section of tissue after completion of treatment. Pathological report: "Under the epithelium a mass of granulation tissue extends deep into the corium. There is no evidence of malignancy."

First pathological report before treatment was commenced: "Mixed parotid tumour (malignant)." Second pathological report: "A mixed tumour of the parotid consisting of two main elements, (1) a dense hyaline fibrous tissue, (2) a typical carcinomatous element the cells of which appeared to be altered epithelial cells in masses, with numerous small lumen-like spaces containing mucus; a duct origin is suggested. Tumour does not feel to be highly malignant."

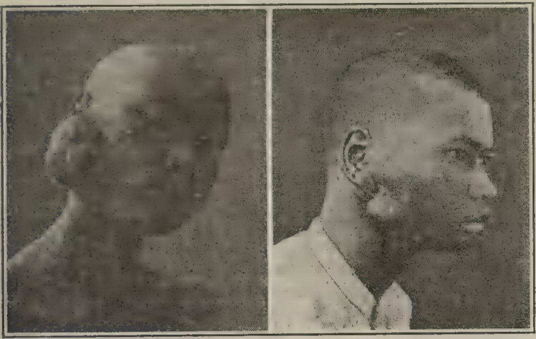
CASE 3.—Mohammedan, male, 55 years. Admitted September, 1923. He was referred to me as a bad case of cancer of the leg, necessitating amputation. The patient, however, wished first to try my method of treatment, and agreed that if no improvement was noticed after two weeks his leg should be amputated. He had a foul fungating ulcer on the mesial aspect of the left leg above the ankle firmly fixed to the lower end of tibia; its diameter was about 4 inches. The femoral and inguinal glands on the left side were enlarged and hard. There was not much emaciation, and the patient was not particularly anæmic. Wassermann reaction negative.

Treatment.—A piece of the growth was sent for pathological examination and treatment was commenced. He had altogether 17 injections of E.E. Cu-margosate and had 16 exposures to X ray mostly of the growth, the glands being exposed only on a few occasions. The ulcer healed up completely. The cicatrix was rather firm and extended for a good extent round the leg. The femoral and inguinal glands were much reduced in size. The remains of the glands were excised and sent for pathological examination. The patient is still under observation; there were no evidences of recurrence up till May, 1925.

Pathological examination of the growth before treatment: "Epidermoid cancer." The lymphatic glands after treatment showed no signs of malignancy.

These three cases have been reported as they were still under observation in my ward when I left Calcutta in May of this year. There were no signs of recurrence. In the third case I apprehended some trouble from the disturbance of venous circulation by extensive cicatrisation which almost encircled the leg.

FIG. 3.



A B

A, Before, and B after treatment.

In some cases I have occasionally scraped and cauterised with thermocautery or electric cautery exuberant and unhealthy granulations. In Case 2 it will be seen that an inoperable growth was rendered operable by this treatment with a satisfactory result. In all cases cicatrisation commenced at the periphery of the ulcer and extended towards the centre, closely followed by epitheliation. Pigmentation appears later at the margins and spreads over the whole surface.

Clinical and Laboratory Notes.

SUDDEN DISAPPEARANCE OF EXTREME ŒDEMA IN CHRONIC NEPHRITIS.

BY A. J. SCOTT PINCHIN, M.D. LOND.,
PHYSICIAN, HAMPSTEAD GENERAL HOSPITAL.

THE following case, as an example of the effect of an acute infection on chronic disease, is of some interest, and appears to be worthy of record.

I. T., female, aged 24, was admitted to the Hampstead General Hospital, July 1st, 1924, with extreme œdema.

History.—She had diphtheria at 8 years of age and ever since her ankles have swollen after prolonged standing, but she had considered herself well till March, 1924, at which time the swelling became persistent and steadily got worse until admission. On admission she had a pale, puffy face and severe œdema extending to above the iliac crests. There was no cardiac hypertrophy, though the second sound over the aortic area was increased. Blood pressure 130/85. Marked diminution in urinary output, much albumin, and granular and epithelial casts. Blood-urea, 40. Concentration test, 2·5–1·9–2·4. Wassermann negative. Urea and other diuretics, salt-free diet, baths, &c., failed to have any effect on her œdema. Tapping of the legs produced only a slight reduction, and the skin was so sensitive that drainage was always accompanied by an eczematous condition of the legs.

As no improvement occurred, my colleague, Mr. Gordon Bryan, decapsulated both kidneys on August 26th. The result was disappointing, and she was transferred back to medical ward on Sept. 14th with no improvement. On Oct. 29th the condition was much worse, much ascites and extensive hydrothorax. The legs were punctured again, and she was kept in the upright position, with the result that the chest was clear by Nov. 12th, the ascites less, but much œdema of the legs and trunk. Thereafter massive doses of urea, puncture, hot air, &c. were used in turn.

April 21st, 1925: She had now been nearly ten months in a water-logged condition and her œdema was about the same as on admission. On the evening of this date her temperature suddenly rose to 101·6° F., and she became extremely ill; there was a red inflamed patch on the right leg but no other signs. By the following morning she had a diffuse erysipelatous condition extending over both legs and most of the trunk. Her fever lasted three days, during which she took no food and was in extremis. Eight days later she was again normal, the urinary output had gradually increased to 90 ounces a day, and the œdema had practically gone. Blood-urea, 16. Urine: trace of albumin, one or two granular casts, no blood. On June 4th no albumin was present and she was fit for convalescent home. She was seen two months later on her return from Torquay. She was feeling almost normal; there was no trace of œdema; the urine contained a heavy trace of albumin but no casts.

Personally, I am at a loss for an explanation of this rapid change; it was certainly allied with the acute disease; whether a cryptic streptococcal infection keeping up the kidney condition was wiped out in the sudden onslaught, or the acute fever opened up lymphatic channels and so broke a vicious circle, or whether to a shock reaction in which one sees so many curious results in so varied a collection of diseases, is a subject for interesting speculation.

My thanks are due to Dr. H. W. Perkins for the pathological investigations.

FAT NECROSIS OF THE BREAST.

BY CECIL ROWNTREE, F.R.C.S. ENG.,
SURGEON TO THE CANCER HOSPITAL.

FAT necrosis of the breast would appear to have been comparatively unknown to British surgeons until Geoffrey Keynes drew attention to the condition at the Section of Surgery of the Royal Society of Medicine,[1] and subsequently published [2] a full description of his case, illustrated by excellent microphotographs, which clearly show the histological features of the disease. The obvious importance of the condition in connexion with the differential diagnosis of cancer of the breast leads me to report the following case.

In October, 1922, I saw an unmarried woman of 31 with extremely fat pendulous breasts, who stated that some months previously she had fallen down and struck the left breast on the ground. No bruise or other evidence of injury was apparent immediately, but two small lumps made their appearance some time afterwards.

Examination revealed two hard nodules the size of hazel nuts, one in each lower quadrant of the left breast. They were situated quite superficially and were definitely adherent to the skin, which was slightly puckered over each of the nodules. There was no retraction of the nipple, no discharge from it, and the axillary glands were not enlarged.

A provisional diagnosis of carcinoma or tuberculosis was made and the nodules were removed for inspection. The tissue proved to be unlike anything I was familiar with, but my suspicion of carcinoma was so insistent that I proceeded to amputate the breast, and sent the specimens to be examined microscopically. The report was as follows: "Cannot make final diagnosis; the tissue is mainly adipose tissue infiltrated with small round cells and a few multi nucleated giant cells. No tubercle bacilli found."

I was chagrined to find that I had probably amputated the breast unnecessarily, but I was particularly disturbed because the sign upon which I have always so greatly depended as almost pathognomonic of cancer—adhesion to the skin—appeared to have let me down, but I recognised that this sign might also occur in tuberculosis, and in spite of the inconclusive pathological report I labelled the case in my notes as "probable tuberculosis" and kept it in my mind for future reference.

The original American paper on Fat Necrosis [3] escaped my notice, but as soon as I saw Keynes's paper I realised that he had furnished me with the explanation of my puzzling case and I sent him my slides, which he kindly examined, and informed me that the histological features were similar to those he had described.

The elucidation of this case naturally led me to search for others of a similar nature, and I have investigated a large number of old notes and sections, but I can find no further examples of fat necrosis in my own experience, nor have any yet been traced in the pathological department of the Cancer Hospital. Mr. Raymond Johnson also, in his Bradshaw lecture on Cancer of the Breast, states that he has had no personal experience of the condition. It is clear, therefore, that fat necrosis of the breast is a very rare disease, but it is none the less important, for it is evident that the condition is almost certain to be confused with carcinoma and treated accordingly—a doubly unfortunate event if, as in my case, the patient happens to be a young woman, and having regard to the traumatic origin of the disease one would expect it to be just as likely to occur in the early as in the later age-periods.

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[1] Brit. Med. Jour., Jan. 17th, 1925, p. 116.
[2] British Journal of Surgery, April, 1925.
[3] Lee and Adair: Annals of Surgery, August, 1920.

It is interesting to speculate upon the progress of events in cases of fat necrosis that are not submitted to operation. All the cases hitherto recorded are based upon microscopic examination of tumours, either definitely diagnosed or strongly suspected to be malignant, and we get no help from them in this particular. Does the mass gradually quiet down and undergo resolution? The fact that the lesion involves the fat overlying or infiltrating the breast and not the mammary tissue itself—a point emphasised by Keynes and clearly shown in my own case—suggests that the damaged tissue may undergo absorption and leave little or no trace.

But to me the chief interest of the condition is the implication of the skin recorded in nearly every case, for this is the one sign above all others upon which reliance may be placed in the diagnosis of malignant disease of the breast. It is, of course, nearly always present in the more advanced cases, but it is frequently present in a very slight degree in quite early cases where the carcinoma is so small that diagnosis would be impossible in the absence of this sign, and I had come to regard it as an almost certain indication of malignancy. A shade of doubt will now be introduced when considering the differential diagnosis of breast tumours which involve the skin, for the possibility of fat necrosis will have to be remembered.

A CASE OF RECURRENT HAIR-BALL OF STOMACH.

By Rufus Harris, M.R.C.S. Eng.,

LATE ASSISTANT SURGEON TO THE GLOUCESTERSHIRE ROYAL INFIRMARY AND EYE INSTITUTION, GLOUCESTER.

The following case is of unusual interest, sufficiently so, I think, to merit publication.

Miss B., aged 35, presented the following history. In 1911 she was operated upon at St. Mary's Hospital, London, for the removal of a hair-ball from her stomach. In April, 1920, she was operated upon by Mr. W. Washbourn, of Gloucester, for a similar condition, and again in June, 1922. When I saw her in October, 1923, she complained of pain and a swelling in her abdomen and loss of appetite of three months' duration.

On examination, a large solid tumour was visible and palpable in the upper part of the abdomen. In view of her past medical history another hair-ball was suspected.

Operation Nov. 11th, 1923, Gastrotomy.—Upon opening the stomach, which was much enlarged, it was found to be entirely occupied by a mass of hair. This extended through the pylorus into the duodenum, and when removed was found to weigh 2½ lb. and measured 20 in. in length. The girth at the largest circumference in the stomach portion was 15 in. Recovery was uneventful and, after giving a solemn undertaking to refrain from the habit of hair-eating, she was discharged as cured. In November of last year the patient once more turned up complaining of a return of her former troubles, and I again removed a large hair-ball. Up to the present I think she remains quite well.

I may add that, apart from her hair-eating habits, this woman is quite normal mentally, being well educated and a very fair musician. She seems to have suffered no permanent ill-effects from her repeated operations since her abdominal wall is firm, and, when her stomach is not full of hair, her digestion is unimpaired.

Exeter.

Medical Societies.

ROYAL SOCIETY OF MEDICINE.

SECTIONS OF OPHTHALMOLOGY AND SURGERY.

Plastic Operations on the Face in the Region of the Eye.

A combined meeting of these Sections was held on Nov. 13th, Sir **Arnold Lawson**, the President of the Section of Ophthalmology, occupying the chair.

Mr. **H. S. Souttar** opened the debate from the standpoint of the general surgeon. He said ophthalmic surgeons must have a greater experience of plastic operations around the eye than he had, but one or two methods used by general surgeons in this region might be of interest to ophthalmologists. Many years ago Dr. J. H. Sequeira, in charge of the skin clinic at London Hospital, began to send the speaker cases of hairy mole on the face, a very common condition. When he first had them to deal with he did not realise what the essential difficulty in treating them was—namely, their proximity to the eye. With one exception, all the cases of the kind he had had to treat occurred in children, and he had treated them all by the arm-flap method. For most plastic surgery in which a large flap was needed, the large tubular flap method, as developed by Gillies, was the most potent; but Mr. Souttar still considered that for children the arm-flap method had great advantages—i.e., using the arm as the pedicle for the flap, the arm being extended over the head. He showed slides of a series of cases by means of the epidiascope. In one of them, an extensive mole, a surgeon had attempted to replace part of the mole by a Thiersch graft, a kind of graft quite unsuitable for these cases. These moles could only be adequately replaced by whole-skin grafts, and for a child these were best taken from the shoulder. In one such case, the photograph of which he showed, two flaps were used, the second from the forehead. Here also some ectropion remained at the angle of the eye, and he left, as was his custom in such cases, a small piece of mole there, excising it some time later and putting in a Thiersch graft. In a case of very obtrusive red nævus he succeeded in establishing a normal colour by diathermy puncture.

Mr. **A. W. Ormond** introduced the subject from the standpoint of the ophthalmic surgeon. The major part of the work in these cases consisted of repairing or replacing either one or both eyelids, correcting irregularities of lids after cicatricial contractions which had led to exposure of the globe, entropion, ectropion, epiphora, or deformities of the lid margins, and making or deepening a socket to permit the wearing of a glass eye. The means mostly consisted of modifications of flaps and grafts. With regard to flaps, these usually consisted of the whole thickness of the skin, and were either pedunculated or non-pedunculated, while the pedicle might consist of flat skin, tubular skin, soft tissue, or a square base of skin. Grafts, consisting of epithelial layers only, might be small multiple islands of epithelium placed on a granulating surface, or large areas obtained by Thiersch's method and applied directly on to a raw surface or stretched over a mould. In the case of pedunculated flaps, the pedicle could consist of skin applied with its raw surface to the underlying tissues, and it was employed to support the nutrition of the flap by connecting it with its original bed. Or the skin could be raised and rolled round on itself to form a tube, and in that event the flap could be obtained from a site a considerable distance away from the face.

General Principles in Cutting Flaps.

When flaps were taken from the skin in the immediate neighbourhood of the wound, Jacobovici laid down the following requirements: (1) The pedicle of the flap should be near the site at which the loss of substance had occurred. (2) The long axis of the pedicle should correspond to the long axis of the flap in its new situation. (3) The long axis of the flap should not be too curved, for the elasticity of the skin would cause the detached flap to take the direction desired. Dieffenbach's and Burow's methods of repairing the lids by the shifting of healthy skin in the neighbourhood of the injury had only a limited applicability, and as the contraction might be considerable, the methods might fail. The bed for the reception of the graft should be moist but free from oozing blood, and the graft should fit its bed accurately. There should be immobility and lack of interference for several days. If a whole flap lived and joined up rapidly, the contraction ensuing was not of great degree; it was greater if the edges of the flap suffered. A flap fitting a raw surface with a subjacent bone or cartilage basis would not be found to contract to the same extent as when the bed consisted entirely of soft tissue.

Mr. Ormond said the methods of dealing with a contracted socket were still unsatisfactory. The chief reason was that the substitution of the destroyed conjunctiva was very difficult. Grafts of mucous membrane from mouth or foreskin were with difficulty rendered aseptic, and owing to the degree of their contraction such grafts did not achieve much. He also considered epithelial inlays disappointing when used to enlarge a contracted socket. It would perhaps be well to begin by inserting a cartilage, or paraffin, or a filigree ball into the socket. The implantation of an artificial globe could be carried out as described by Webster Fox. During the war the speaker used cartilage as a substitute for a glass globe, but he regarded paraffin balls as superior. In cutting a Thiersch graft he preferred a large flat knife with a blade an inch deep, the knife and skin being kept moist with sterilised normal saline irrigations. With regard to the wound to be grafted, all granulations should be completely removed, preferably with scissors, perfect hæmostasis being obtained by pressure. The wound could be washed when necessary with sterilised normal saline and kept immobile, covered with thin dry gauze dressing and cotton-wool, and left without interference for a week. At the end of that time the dressing should be removed by soaking it for the time necessary to float off the wool and the gauze, possibly as long as an hour.

In ordinary peace conditions the individuality of the patient should be taken into consideration in deciding on the procedure—i.e., his position in life, financial standing, and his occupation. In some cases the prospect of a long treatment and the repetition of operations with the inactivity had a bad effect on the mentality. Where there were no special circumstances limiting the choice of procedure, the method employed should be that which most nearly approached the normal.

Mr. T. P. KILNER showed a number of slides illustrating results secured at the hospital at Sidcup in cases of the kind under discussion. These included some very severe examples of symblepharon, in which Thiersch grafts were used successfully, both on the globe and on the inner aspect of the adherent eyelid. A further procedure carried out was that for replacing lost eyebrows. In dealing with a considerable number of cases of bad burns of the face, some of them by explosions of petrol, it was found that the eyebrows possessed three definite functions: shading the eye from the sun; acting as collectors of sweat—officers who had lost their eyebrows complained that when playing tennis the perspiration poured into their eyes; and the third function was protection of the eyes from the wind. Eyebrows might be made by whole-thickness grafts from hair-bearing skin, the area being carefully selected beforehand to see that the hairs were growing in the direction required in the brow.

Mr. G. H. POOLEY (Sheffield) said that, following the surgical removal of tumours, plastic operations could be carried out immediately if the base was satisfactory and the patient's condition warranted it. In the case of accidental wounds which were fairly clean, grafting could be carried out as soon as the wound became clean and quiet. But in the case of burns caused by molten metal, by chemical or by electrical means, grafting must be deferred until the contraction of the scar ceased. And where the deficiency of tissue was due to septic conditions, causing extensive sloughing, he considered that no attempt to graft should be made for at least 12 months after all sepsis had apparently ceased. When operating for any but recent injuries the skin should be incised about a quarter of an inch from the palpebral opening, parallel to the margin of the eyelid affected. It was most satisfactory, he found, to use a large flap with a wide pedicle, large enough to more than fill the space. For a badly contracted socket a modified long temporal skin flap could be used. The complication which he found caused perhaps the most trouble was that which following a burn produced an extensive adhesion of the eyelid to the eye, especially when a large part of the cornea was involved. For this, he divided a gross adhesion of the lower lid to the lower two-thirds of the cornea, and cut through the tissue which obliterated the lower fornix of the conjunctiva, cutting freely to each side, and continuing the incision below to three-quarters of an inch below the original bottom of the fornix. He then sutured a layer of rubber sheeting into the wound to keep the two raw edges apart. He left it in situ for months, until epithelium had grown over the raw surfaces. The result of this procedure had been most satisfactory.

Mr. J. J. SHAW (Edinburgh) showed a number of slides of cases on the screen, and described the operation he had carried out in each instance.

Mr. M. W. B. OLIVER adopted a similar method, and laid stress on the importance of not making the grafted lids bulky. A temporal flap should always include the superficial temporal artery. In order to carry out an epithelial inlay properly it was necessary to remove the whole of the conjunctiva and all the orbital tissue; his custom was to remove everything down to the periosteum. Moreover, the mould must be covered with one single skin-graft.

Mr. A. EDMUNDS gave his experiences with rodent ulcers of an extensive nature by means of grafts, his method of choice being to excise the growth and replace it by a sliding flap. He likewise showed a number of photographs of cases in stages.

Mr. T. HARRISON BUTLER said that in cutting Thiersch grafts it was an advantage to coat the razor with paroleine or sterilised olive oil.

Cases were shown before the discussion by Mr. MALCOLM HEPBURN, Mr. OLIVER, and Mr. F. A. WILLIAMSON-NOBLE.

MEDICAL SOCIETY OF LONDON.

AT a meeting of this Society, held on Nov. 9th, Sir HOLBURT WARING, the President, occupying the chair, a discussion on

OBSCURE PYREXIA IN CHILDHOOD

was opened by Dr. ROBERT HUTCHISON. Cases of fever in childhood without physical signs were, he said, met with in practice in three forms. The first were those with an acute fever which had lasted for more than a week without being accompanied by obvious physical signs; the second were those cases which had recurring bouts of fever; and the third had very prolonged fever but slight in degree.

Acute Fever without Signs.

In cases in the first of these classes influenza was apt to be the diagnosis arrived at, but in uncomplicated influenza the fever did not last more than a week, while if complications did exist, physical signs would be present also. An enteric infection should always be thought of, perhaps especially one of the paratyphoids, and this was not by any means excluded by the absence of all the classical signs and symptoms of paratyphoid infection. A diagnosis could be made in the early days by means of a blood culture, and, after the tenth day, by the agglutination test. Confirmation was afforded by the presence of leucopenia. A pulse-rate which was low in proportion to the temperature was always suggestive. Many cases in this same group were due to a pneumonia beginning deep down in the lung, or which affected only the apex, signs of which were either absent or had been overlooked. Also a high respiration-rate with "inverted rhythm" was suggestive, and light percussion would often, in such cases, elicit dullness. *B. coli* pyelitis in babies might produce an acute and sustained pyrexia, with but little to direct attention to the cause. The urine might seem clear, but a centrifugalised catheter specimen would disclose the organism; and the therapeutic test—disappearance of the fever when the urine had been rendered alkaline—would confirm the diagnosis. A very rare cause of obscure pyrexia in childhood was the condition known as medical septicæmia, but it might sometimes be found to follow an acute throat infection whose symptoms had been slight, perhaps had been quite overlooked. Rashes, joint pains, and other indications of a septic process might occur, and usually a blood culture would show the presence of streptococci.

A condition which should always be thought of in young children was acute otitis media. There might be but slight earache to direct attention to that organ, and inspection of the drum in young infants was often difficult. The problem might only be solved by the sudden appearance of a discharge from the ear. Dr. Hutchison was somewhat sceptical of teething being, in itself, a cause of continued obscure pyrexia, but admitted that occasionally cases were met with in which no other reason could be assigned. He quoted one or two such. Constipation might sometimes bring about even high and continued pyrexia, for it disappeared at once after a large enema. One child, 5 years of age, had, when seen, been running a temperature of 103° F. for eight days. The surroundings were insanitary, and at first it seemed likely to be enteric. But an enormous greenish offensive stool was evacuated, and thereafter the temperature became and remained normal.

Coming now to rarer causes of pyrexia, Dr. Hutchison mentioned first acute leukæmia. Especially if of the myeloid variety, this might reveal itself by fever for some days before enlargement of the spleen or glands, or the presence of anæmia were definitely perceptible. The possibility of acute miliary tuberculosis existing for some time, without definite evidence in the lungs or elsewhere, must always be present in the clinician's mind. A rapid respiration and pulse, and the presence of cyanosis, must be regarded as suspicious signs, and examination of the fundus oculi might reveal tubercles.

Recurrent Fever.

In the second group the child, usually beyond the age of infancy, had bouts of fever which lasted, at the most, for a few days, good health apparently prevailing between. Many of these cases were of alimentary origin, the so-called "food fever" of Eustace Smith, or the "hyperpyremia" of Francis Hare. These children, in many instances, had chronic intestinal indigestion or mucous disease, and the recurrence of the fever in them could be prevented by cutting down the diet, especially in the matter of milk, and by the administration of aperients and cholagogues. In another group of recurrent fevers the cause would be found to be a chronic septic infection of the tonsil. In these there would usually be a history at some time of acute tonsillitis, and the glands at the angle of the jaw would be found to be enlarged. Excision of the tonsils in these cases caused the attacks to cease. In children of about this age, too, chronic *Bacillus coli* infection of the kidneys, with periodic exacerbations, was an occasional cause of recurrent pyrexia, and could easily be overlooked. Examination of the urine during an attack would reveal the presence of the organism along with some pus. A focus of deep-seated tuberculosis, such as in the mediastinal glands, might also cause recurrent pyrexia. Methods of determining its presence needed consideration.

Prolonged Slight Fever.

In the third group the fever had lasted some weeks, even months, but was slight, perhaps not more than half or one degree in the evening. In some this was due to a chronic focus of sepsis, and the focus was very likely to be in the tonsils. Others were associated with chronic mucous colitis, which could be recognised by the presence of mucus and membranes in the stools. Latent rheumatism had sometimes been suggested as a cause of slight continued pyrexia, but the speaker considered that this was a rare event without other evidences of rheumatic infection, such as muscle and joint pains or chronic endocarditis. In this class of case, too, tuberculosis must be present to the mind, though that disease is not a frequent cause of this type of fever. Its exclusion from the possibilities was often a matter of difficulty. Teething could cause the same form of slight fever, and cases were adduced in which the fever ceased when a molar had been erupted. A further possibility which had been enlisted in this type of case was instability of the thermo-taxic mechanism, but the speaker's experience was that true neuro-mimetic fever did not occur in childhood. He suggested that the discussion might very usefully take the form of considering the means of excluding tuberculosis in cases of obscure pyrexia occurring in childhood.

Discussion.

Dr. WILFRED PEARSON said in some of the cases which had ended in an aural discharge the temperature had been of the septicæmic type, and the ear symptoms had been very slight. It was often an advantage to do a blood count, when a leucopenia and polymorphonuclear leucocytosis would sometimes be found. Deficient fluid might be a cause of fever, or the ingestion of sodium chloride might produce it. In dealing with cases of persistent slight temperature, the trouble often was in knowing what was the normal temperature to the particular child. His experience had been that up to the age of 10 years 99° F. must be regarded as normal in the morning, and in the evening 99·5°. In some slight temperature variations it was difficult to exclude a skin eruption, constipation, or slight catarrh. Sometimes a slightly high temperature was found to be a family characteristic. He agreed as to the importance of diagnosing between tuberculosis and mucous disease, but the differentiation had to be made mainly on clinical grounds. He had found much help from the fact that children with mucous disease wasted intermittently, while in tuberculosis the loss of weight was progressive and regular. It was also important to make a number of examinations of stools. It must always be remembered that tonsils which looked harmless might yet harbour a septic focus and keep up the temperature.

Prof. F. LANGMEAD agreed as to the frequency with which cases of *B. coli* infection were missed, largely because examination of the urine in a small child seemed so often to be regarded as of little importance, and specimens were not collected without difficulty. He had seen a lancing of the gums bring down temperature at once. One puzzling case was that of a child who was running a temperature of 104°, and eventually the administration of ergot brought away a dead round worm, and no fever occurred after that. The presence of intense cyanosis in a child should lead to strong suspicion that the temperature was caused by acute general miliary tuberculosis. Also there must be considered cases of "cyclical vomiting" without cyclical vomiting. He had watched some of these cases through and found that at about puberty they suffered from migraine. He referred to protein idiopathy as a cause of temperature in Dr. Hutchison's fourth group. In cases of long-continued bouts of fever it was important not to neglect the psychological background; some children exhibited fever following excitement, pain, or even excessive exercise. Tuberculosis might be the explanation of the fever in any of the groups Dr. Hutchison submitted, and he commented on the great discrepancy which existed between clinically diagnosed and undiagnosed (until autopsy) tubercle, a very important matter in such a serious disease. It was, however, on the whole, a disease which was well resisted by children.

Dr. **Walter Broadbent** spoke of the importance of the proximity of manholes as a cause of obscure pyrexia, and gave several examples bearing out his contention. He also showed that teething was a fairly frequent cause of pyrexia, which was stopped as soon as the gums were lanced. Sometimes tuberculosis following measles was a cause of temperature persisting, for a later sequel had been tuberculous meningitis. He also believed rheumatism to be a cause of intermittent pyrexia. He now treated his cases of rheumatic fever by placing them on the balcony in the open air.

Mr. E. D. **Davis** said that with regard to the tonsil, sometimes this was salient and obtrusive, but a deeply buried tonsil might be equally large. In an ear case the child was more obviously ill and looked ill. Examination of the child's ear with a Siegel's speculum obviated some of the disadvantages mentioned by Dr. Hutchison, and the comparative absence of pain in the ear was for the reason that there was not much tension at the site, and the child's drum would burst without much provocation. In children, otitis media sometimes developed very rapidly—within a few hours.

Mr. **Cecil Rowntree** said that the finding of calcified mesenteric glands indicated that those glands had at some time probably caused an obscure pyrexia, probably they were the kind of cases which had become infected in infancy with tuberculous milk, for infection from that cause frequently took place in the glands at the ileo-colic angle. Probably the trouble caused in early life was too slight to lead to a diagnosis. The X rays could be of use in the early stage of tuberculosis of mesenteric glands, as they showed a flocculent appearance; later the glands could be seen to be calcareous.

Dr. G. E. **Ward** gave an account of a striking case of pyrexia due to a round worm, the temperature at once subsiding when the worm was evacuated.

Dr. A. **Castellani** called attention to the group of parenteric fevers, with a behaviour like enteric. In Ceylon and India it was common to see children with fever whose stools were filled with acarus eggs. He referred also to ankylostomiasis fever, some cases of which exist, he said, in this country.

Dr. F. G. **Chandler** spoke chiefly on skiagraphic signs of tuberculosis in children, and exhibited skiagrams to illustrate his points.

Dr. G. W. **Goodhart** spoke on colon bacillus pyelitis as a cause of pyrexia, and questioned the opener as to the signs which were thought to establish the diagnosis. He would not himself lay stress on any of the organisms he might find in a child's urine.

Corrigenda.—In the Bradshaw lecture (The Lancet, Nov. 14th, p. 1010, col. 2, line 40) the phrase "their regular peristalsis" should read "the irregular peristalsis."

The word diuretin in the penultimate sentence of Dr. A. R. Gilchrist's article in the same issue on "Novasurol: a New Diuretic," should read *diuretic.*

GLASGOW ROYAL MEDICO-CHIRURGICAL SOCIETY.

A meeting of this Society was held on Oct 23rd, Prof **Archibald Young**, the President, in the chair, when a discussion took place on

Optic Neuritis and its Significance.

The President, introducing the discussion, referred to the varying applications of the term optic neuritis, and suggested a number of questions on which he hoped the discussion might throw some light He urged the importance of the early recognition of the presence of optic neuritis while the chances of saving vision were still reasonably good

Dr. H. **Wright Thomson** opened the discussion by reviewing briefly the terms in common use in connexion with inflammation or congestion of the optic nerve—e.g., retrobulbar optic neuritis, optic neuritis, papillitis, papillœdema or choked disc, neuro-retinitis, and optic pseudo-neuritis. He differentiated optic neuritis as seen by the ophthalmoscope in the light of recent pathology into two classes: (1) A true neuritis—i.e., an inflammation of the nerve head—to which the name papillitis was given. (2) Papillœdema, where the changes were due to œdema and histological evidence of inflammation was absent or so slight as to be negligible. Considering next the mechanism producing papillœdema, he quoted Sir John Herbert Parsons's views that the predominant factor was increased intracranial pressure, and referred to the three common theories as to its production. (*a*) Impediment to the return of lymph along the intravaginal space of the nerve. (*b*) Impediment to the venous return. (*c*) Arterial anæmia, leading to altered conditions of osmosis at the nerve head. While a true typical neuro-retinitis was easily distinguishable from a true papillœdema, there were many cases in which it was impossible to say whether the ophthalmoscopic picture was papillœdema or neuro-retinitis. Finally, Dr. Thomson referred to the extraordinary variation in the appearance of different persons' normal discs, and uttered a warning against the diagnosis of inflammation or œdema in the absence of any definite swelling or hæmorrhages, especially if both fundi showed the same picture.

Dr. A. J. **Ballantyne**, in discussing the part played by papillœdema in the diagnosis, prognosis, and treatment of medical and surgical cases, referred to some interesting figures obtained from the records of routine eye examination in (*a*) a general hospital, and (*b*) an eye hospital. In 1100 cases examined, without selection, in the wards of the general hospital, papillœdema was found in 5 per cent.; intracranial tumour, renal disease, and tuberculous meningitis providing the vast majority of examples. Among 6000 cases seen at the Eye Hospital only 0·5 per cent. showed papillœdema, and the majority belonged to two classes, renal neuro-retinitis and acute retrobulbar neuritis. In private practice papillœdema of any form or degree apart from albuminuric neuro-retinitis was extremely rare. In the Eye Hospital cases not a single example of choked disc or of intracranial tumour was found in over 6000 cases. Papillœdema occurred most frequently as part of a neuro-retinitis either frankly renal or arterio-sclerotic in type. Acute retrobulbar neuritis was surprisingly common, differing, however, from the classical description in that the cases presented a notable degree of papillœdema indistinguishable, in some cases, from that due to early cerebral tumour or from that of renal neuro-retinitis. Referring to the question of trauma as a cause of optic neuritis, the speaker quoted two cases in which papillœdema occurred, along with other evidence of injury to the base of the brain. This was attributed in the one case to œdema of the brain following concussion and in the other case to cavernous sinus thrombosis. Finally, discussing papillœdema as a guide to treatment, Dr. Ballantyne considered that it had little or no localising value in intracranial tumours, nor even was it a guide as to the side of the brain involved, and he concluded by making a plea for greater concentration on the simpler problem of decompression for the preservation of sight, rather than on the time-consuming though doubtless higher aim of the accurate localisation and removal of the tumour.

The following also spoke: Prof. T. K. **MONRO**, Prof. W. K. **HUNTER**, Dr. **BROWNLOW RIDDELL**, Mr. **DONALD DUFF**, and Dr. T. S. **BARRIE**.

The **PRESIDENT** then described briefly a method of supporting the bulging brain in extensive decompressive trephining, and showed a number of illustrative coloured drawings.

JAMES MACKENZIE INSTITUTE FOR CLINICAL RESEARCH, ST. ANDREWS.

AT a meeting of the Institute on Nov. 3rd Prof. **LORRAIN SMITH** read a paper on the Pathology of Focal Infection, illustrated by numerous lantern slides. The lecturer demonstrated the spread of infection from focus to focus in many infective conditions, including tubercle, and showed clearly that certain organisms could circulate in the blood without giving rise to noticeable symptoms, until they formed a focus in the tissues. These foci were found in connexion with lymph nodes which were exceedingly numerous in all tissues. On the settlement of an organism the local resistance might be sufficient to destroy it, but if the focus became established it acted as a centre of distribution from which other foci were formed. The main source of destruction of organisms was, however, undoubtedly the blood. The explanation commonly given of the formation of foci was the arrest of active material by mechanical obstruction in lymphatics or capillaries, but similar focal lesions resulted from the presence of soluble toxins in the blood. An investigation into the focal mechanism which was responsible for such results should advance greatly our knowledge of the liability to disease. The lecturer also drew attention to facts, established by Rosenow, suggesting that in some instances infective organisms might acquire a property by which they showed a selective preference for certain sites. Typhoid bacilli showed a noteworthy preference for the gall-bladder, for example, while metastatic infection in bronchiectasis showed a predilection for the central nervous system. The problem of general immunity had been widely investigated, but the question of local immunity and the focal mechanism upon which it was dependent had not been worked out. The paper gave rise to an interesting discussion.

BRISTOL MEDICO-CHIRURGICAL SOCIETY.

A MEETING of this Society was held on Nov. 11th at the University of Bristol, when Dr. H. H. **CARLETON** read a paper on

Some Pulmonary Problems,

with a special reference to radiography. He emphasised three points in technique if the maximum value was to be obtained from skiagraphy: (1) rapid exposure, about half a second ; (2) the film must be sufficiently large to include the whole chest ; (3) a standard position for the target. In interpretation of skiagraphs, he said, it must be remembered that normal lungs differed widely in the amount of fibrous tissue they showed. Well-marked striation might be compatible with perfect health. Clinical fibrosis required dense shadows, falling-in and rigidity of chest, and shortness of breath. In silicosis the fibrous tissue often occurred in plaques. Peripheral stippling in intercostal spaces was seen alike in bronchopneumonia, tuberculosis, and silicosis. The differential diagnosis could not be made with certainty on radiographic appearances alone.

The mobility of the trachea led to visible deviation of the tracheal shadow in chronic cases. Such deviation was an index of chronicity, and therefore a measure of the powers of resistance on the part of the patient. Further deviation of the trachea and mediastinum was a guide as to the results of intrathoracic pressure in cases of pneumothorax, and, if noted, excessive pressures could be avoided. Fluid in the chest, when gas was also present (hydrothorax), presented a clean-cut mobile straight line, characteristic in appearance and widely different from the fine line seen in simple pleural effusion. It was impossible by skiagraphy alone to distinguish between the presence of serous effusions and pus in the chest. Glands in the chest did not necessarily indicate active disease; they more usually indicated good resistance. When stippling occurred in the intercostal spaces beyond the field of the intrapulmonary glands it was an indication that the glands had failed in their efforts to resist the advancing tide of infection. Cavities should never be diagnosed on X ray appearances alone without confirmatory clinical signs. Radiography showed that pulmonary tuberculosis was by no means so frequently an apical disease, even in its early stages, as was commonly supposed.

The speaker demonstrated the value of radiography in relation to treatment by artificial pneumothorax, both in the choice of cases and as a guide during the progress of induction of an artificial pneumothorax. He spoke of the possible dangers of infection of the pleura from the breaking down of adhesions, a misfortune which had occurred to him in a case of unilateral bronchiectasis. The lecturer expressed his thanks to Dr. F. J. A. Mayes and Dr. F. G. Bergin for their assistance in providing his series of skiagraphs.

Discussion.

Dr. **BERGIN** said that while agreeing that peribronchial infiltrations were usually not indications of tuberculosis, they were often indicative of early pathological changes. He did not agree that, if the upper level of fluid in a chest appeared as a line, gas was present.

Dr. **MAYES** maintained that an X ray diagnosis of tubercle could often be made before clinical signs enabled this to be done. He attached importance to diminution of diaphragmatic excursion ; this meant a gross lesion of the lung. He emphasised the importance to be given to shadows in the outer third of the chest area ; in the medial third shadows were not uncommon. The more dense and definite a shadow, the less active the condition causing it.

Dr. F. H. **EDGEWORTH** related a case in which good health was interrupted by a sudden hæmoptysis. No physical signs appeared, except loss of diaphragmatic movement, shown by X rays. Three weeks later an apical friction was found. Sanatorium treatment was successful.

Dr. J. O. **SYMES** thought that "skiagraphy showed too much rather than too little." He had never seen a case with no symptoms or physical signs in which the skiagram helped a diagnosis of phthisis. He was interested to learn of the tracheal deviation as a new and helpful sign, and asked whether there was any means of diagnosing adhesions by the X rays.

Mr. C. F. **WALTERS** related a case in which a definite upper level of fluid was seen. No empyema was found, but at operation a lung abscess was discovered.

Dr. J. A. **NIXON** said that screening was important. He agreed that striæ did not necessarily indicate tubercle, and that "cavities" diagnosed by skiagraphy often did not exist at autopsy. But a similar mistake was not unknown when physical signs were relied on.

Dr. **CAREY COOMBS** thought that a linear upper border of fluid did appear when no physical signs indicated gas, and suggested that we might have to reconstruct our ideas on intrathoracic physics ; this promised an interesting research. The great value of X rays lay in their help in showing the position and extent of lesions.

Reply.

Dr. CARLETON, in reply, said he thought there was one sign of a cavity which was reliable—a semicircular area of which the straight side was influenced by gravity, and which could be made circular by coughing up the contents. In regard to the line above fluid, he meant a clear-cut definite line, about which there was no mistake—this was pathognomonic of gas. When screening a chest the eyes should be fully accommodated to darkness; minimal illumination was useful in bringing out slight differences in transparence. Defective movement of the diaphragm was a sign of pleurisy, not of tubercle. He was satisfied that artificial pneumothorax was the best method of arresting hæmoptysis.

NOTTINGHAM MEDICO-CHIRURGICAL SOCIETY.

AT the first meeting of the session Mr. H. BELL TAWSE, the President, took the chair, and Sir STCLAIR THOMSON gave an address on Difficulties in Deglutition and Some Diseases of the Œsophagus. After strongly condemning the use of bougies, coin-catchers, and probangs, Sir StClair Thomson illustrated, by a series of lantern slides, the development of the endoscope from the time of Bozzini to the present day, and showed how the advent of electricity, cocaine, the telephone, the motor-car, and the X rays had made it possible for a patient having a foreign body in the upper air or food passages to be brought from a distance, diagnosed, and effectually treated within a few hours of the accident. Other slides showed congenital occlusion of the œsophagus, pharyngeal and œsophageal pouches, achalasia of the cardiac orifice, and malignant disease. The lecturer pointed out the futility of gastrostomy in congenital occlusion and the advisability of operating on pouches before the patient was too wasted. He asked philosophers to explain the thickening of the walls in achalasia; recommended early gastrostomy in malignant stricture; and, touching upon the difficulties and dangers of œsophagoscopy, drew special attention to the thinness of the œsophageal walls, and emphasised the need for the expert in these cases. He wound up his address by strenuously advocating the routine examination of the larynx and œsophagus in all cases of hoarseness or dysphagia of three weeks' duration.

ULSTER MEDICAL SOCIETY.

AT a meeting of this Society, held on Oct. 29th, Mr. JAMES A. CRAIG delivered his presidential address on the Retina in Constitutional Disease. After drawing attention to the close relationship between ophthalmology and general medicine, he spoke of the advantages of the eye as an organ in which to study the circulation and its abnormal conditions, and described Bailliart's method of estimating the tension of the retinal arteries. Having illustrated the ophthalmoscopic appearances in hyperpiesis and sclerosis, he laid emphasis on the part which sclerosis of the small vessels, such as those of the retina, plays in the production of general hypertension. An ophthalmoscopic examination afforded an index of the condition of the small arteries throughout the body. He pointed out how often sclerosis of the retinal vessels was discovered by the oculist in patients who considered themselves in perfect health, and discussed what should be done. Referring to the question how far the condition of the retinal vessels was a guide to that of the cerebral, Mr. Craig quoted the work of Foster Moore and Adams, and mentioned the parallel which exists between amaurosis fugax and retinal thrombosis, on the one hand, and temporary aphasia or paresis and cerebral thrombosis on the other. He then gave an analysis of 50 consecutive cases in which retinal hæmorrhages were discovered during a routine examination in patients complaining of eye symptoms. In referring to the unduly large percentage of these in which no information on the result of a general examination of the patient could be obtained, he appealed for a closer coöperation between the practitioner and the oculist. In a review of the subject of renal retinitis, attention was drawn to the resemblance which exists between the symptoms of eclampsia and those of acute lead poisoning. It was suggested that the constriction of the retinal vessels and blanching of the fundus characteristic of the latter might be found to some extent in patients suffering from eclampsia during the attack, although in this condition it was generally held that no changes occur in the fundus. The address concluded with a review of the evidence of the existence of diabetic retinitis as a distinct entity, and suggested a coördinated investigation by the oculist, physician, and biochemist, in order to add to the knowledge of the essential nature of the fundus changes associated with glycosuria.

FRENCH NATIONAL LEAGUE AGAINST VENEREAL DISEASE.

CONFERENCE ON CONGENITAL SYPHILIS.

THE conference on congenital syphilis organised by the League was held in Paris from Oct. 5th to 7th with Prof. Jeanselme in the chair, when the three days were devoted to discussion on (1) latent congenital syphilis, (2) the treatment of congenital syphilis in the suckling and the young child, and (3) the preventive treatment of congenital syphilis.[1]

Latent Congenital Syphilis.

Mr. Leredde opened with the assertion that alongside well-established cases of congenital syphilis with well-marked symptoms and signs and positive serum reactions, there exist much more frequent forms where the diagnosis is by presumption. Such presumption is permissible if there exist any congenital malformation or maldevelopment whatsoever, or any chronic malady in an infant the cause of which cannot be ascertained, any history in any relatives of any disease which may possibly be caused by syphilitic infection, any familial affection whatsoever, and certain varying changes in the blood and cerebro-spinal fluid. To the signs of congenital syphilis in young children described by Marfan, the speaker added cases of enteritis in the absence of any dietetic errors, eczema and prurigo in infants, and recurrent bronchitis in young children. Among the late symptoms due to latent congenital syphilis Mr. Leredde would include certain neuroses and neurasthenic states, epilepsy, mental deficiency, Parkinson's syndrome, incontinence of urine, "pure" mitral stenosis, emphysema, bronchitis, asthma, dyspepsia, chronic appendicitis, Graves's disease, and diabetes. He also stressed the close relationship between congenital syphilis and tuberculous infections.

MM. Lesné and Boutelier also brought forward a long list of disorders caused by latent congenital syphilis, and among others not mentioned by the previous speaker were Paget's disease, chorea, myopathies, and aerophagy.

Mr. Devraigne referred to Prof. Marfan's figures, which went to show that at the Hôpital des Enfants-Assistés 16 per cent. of infants had certain congenital syphilis, and if the probable cases be included this percentage is nearly doubled. He dealt with certain results of syphilitic infection on the fœtus and fœtal structures during pregnancy, and largely followed Marfan in his list of disorders in infancy due to syphilitic infection. He discussed the Wassermann reaction in congenital syphilis, pointing out that in the early months a positive reaction may be masked by, it has been suggested, the presence of excess of bile pigments in the blood.

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[1] A full report of the discussion appears in the Presse Médicale, Nos. 82, 83, and 84, 1925.

Mr. Carle (Lyons) dealt with many of the masked forms of congenital syphilis, and among previously unmentioned diseases quoted infantile paralysis, disseminated sclerosis, mongolism, and many dermatoses. He emphasised the difficulty of diagnosis and said that he considered the result of antisyphilitic treatment the best criterion of the nature of doubtful signs and symptoms.

In the discussion which followed, Mr. Lesné uttered a note of warning lest any affection of childhood of unknown origin be called "masked" congenital syphilis, and dealt with certain diseases which are rarely caused by this but are more frequently due to other infections.

Treatment of the Newly Born.

Mr. Marcel Pinard dealt with the treatment of congenital syphilis after the birth of the child. He referred to the administration of mercury by the skin, by the mouth, and by the rectum, mentioning also the use by the mouth of stovarsol and treparsol. Intravenous medication, particularly the use of arsenical compounds, was thoroughly dealt with. He considered the intravenous route the most effective: it is less painful than the subcutaneous or intramuscular, the drug is rapidly absorbed and quickly arrests the syphilitic process. He thought that the use of too small doses might actually do harm.

Mr. H. Lemaire also considered the intravenous injection of novarsenobenzol the method of choice, and stated that accidents were very exceptional. He employs the drug dissolved in 4·7 per cent. glucose solution, and follows Marfan's dosage of 0·5 cg. per kilogramme of body-weight for a first dose, followed by 1 cg. for two doses, and then 1·5 cg. for the next five doses, all per kilogramme. The drug is given at weekly intervals for eight weeks. He referred to the use of bismuth by intramuscular injection, and considered that therapeutically mercury comes last on the list of these three drugs. The duration of treatment was generally about four years, although with novarsenobenzol this period might be somewhat reduced.

In the discussion which followed, Mr. Van der Valk, of Amsterdam, gave an interesting account of his treatment of 41 cases of congenital syphilis. He used calomel by the mouth and neosalvarsan by intramuscular injection over a period of three years. All symptoms disappeared, the infants put on weight in a regular manner, but with one exception the Wassermann reaction remained positive.

Preventive Treatment.

Mr. Milian divided his treatment into that given before marriage, after marriage, during pregnancy, and after pregnancy. He referred to the social questions involved, the question of the forbidding of marriage to infected individuals, and the examination of suspected persons. After marriage he emphasised that the best prophylaxis of congenital syphilis was the treatment of the woman before conception, and if pregnancy occurred, energetic treatment along accepted lines must be adopted at once. Even if the wife appears healthy and gives no indication of infection by a syphilitic husband, she should nevertheless be treated during pregnancy.

Subsequent speakers dealt with the question of professional secrecy where one parent is infected unknown to the other, to the fact that in a pregnant woman, undoubtedly infected with syphilis, the Wassermann reaction may be negative, and to the importance of widespread education on the whole question of venereal disease.

Reviews and Notices of Books.

NEUROLOGICAL FRAGMENTS.

By J. HUGHLINGS JACKSON, M.D., F.R.S., F.R.C.P. With Biographical Memoir by JAMES TAYLOR, M.D., F.R.C.P., and including the "Recollections" of the late Sir Jonathan Hutchinson and the late Dr. Charles Mercier. London: Humphrey Milford, Oxford University Press. 1925. Pp. 227. 12*s.* 6*d.*

To a younger generation of neurologists to whom Hughlings Jackson can only be a name, mentioned though it be with respect and affection by their seniors, this volume of reprinted Neurological Fragments will serve to indicate some of the grounds on which he is justly regarded as the pioneer of scientific neurology in England. The Fragments have been familiar to all those who learned from Jackson, and it is amazing how on a re-reading they still inform. They contain little that stands in need of modification. When a Victorian play is staged again to-day the critics are fond of pointing out how it "dates"; there is practically nothing in the Fragments that "dates," if by that is signified their containing points of view from which neurology has moved away. On the contrary, the principles they enunciate are in need of still further application.

It is pleasant, too, to have herein collected Dr. James Taylor's Memoir and Sir Jonathan Hutchinson's and Dr. Charles Mercier's Recollections. The hero-worshipper can never hear too much of his hero. Reading these intimate reminiscences, he will see again in his mind's eye the figure, and hear the soft accents, of the man who found English neurology insecure and shaky, and left it an edifice of marble.

OPHTHALMIC PLASTIC SURGERY.

Newer Methods of Ophthalmic Plastic Surgery. By EDMUND B. SPAETH, M.D., F.A.C.S., Chief, Eye Clinic, Walter Reed U.S. Army General Hospital, Washington. Philadelphia: P. Blakiston's Son and Co. 1925. With 168 illustrations. Pp. 258.

THIS volume embodies a good deal of experience in the treatment of facial deformities involving the eyelids, which were so painfully common in the war hospitals of recent years and are not unknown in civil life. This book was planned, we are told, to serve the general ophthalmologist in his everyday practice. It is, however, the reverse of elementary. The ordinary text-book methods of dealing with entropion, ectropion, ptosis, &c., are not given, only bare mention of them being made. The bulk of the text is devoted to those newer methods of plastic surgery to which so great an impetus was given by the war. Esser's and Gillies's methods of applying skin grafts, hair-bearing grafts for the restoration of lid margins, cartilage grafts for the restoration of the orbital floor, fascia lata and mucous membrane grafts, various forms of pedicle grafts for contracted sockets and for the reconstruction of either lid, these are samples of the subjects with which this book deals. The illustrations are copious and clear, but the text not always sufficiently explicit. Many of these procedures are difficult to perform and almost impossible fully to understand solely from explanations read in a book. The prudent surgeon, however, will not confine himself to a study of books as a preparation for this sort of work. In conjunction with practical experience this volume is calculated to be of great assistance to him.

A matter of some importance is that the author is decidedly opposed to the employment of paraffin injections in ophthalmic plastic surgery. The use of different substances to provide a movable stump after enucleation is discussed. The method preferred is employment of a glass ball in Tenon's capsule with careful suturing of the muscles. Dr. Spaeth has had but two failures in a series of 28 cases. He adds, however, a piece of information which will be new to many and ought to be known: "The life of a glass Mules's sphere in the orbit is between 20 and 25 years before the glass becomes eroded and breaks down." The work is completed by an appendix consisting of a classified bibliography in which the references which the author has selected as being most useful are given under various headings.

Diseases of the Heart.

Fourth edition. By Sir James Mackenzie, F.R.S., M.D., F.R.C.P., Director, St. Andrews Institute for Clinical Research; Consulting Physician to the London Hospital; Consulting Physician to the King in Scotland. London: Humphrey Milford, Oxford University Press. 1925. Pp. 496. 30*s.*

Sir James Mackenzie completed the fourth edition of his well-known text-book on diseases of the heart shortly before his death. The previous edition appeared in 1913, and in the intervening years the book has been reprinted with only a few minor alterations in the text. Largely as the result of the work of himself and his colleagues at the St. Andrews Institute for Clinical Research, the author felt that the time had now come to reconsider the whole conception of heart disease, and decided to incorporate his present view in a new edition of his previous work. In his later years Sir James Mackenzie had become firmly convinced that research in medicine, and especially in cardiology, had been diverted from the line most likely to lead to real progress, and was pursuing by-paths which resulted in the accumulation of a mass of facts that tended to confuse rather than to elucidate the central issue—namely, the mechanism of production of heart failure. He set himself, therefore, to seek out the fundamental conditions underlying ill-health and to formulate certain general laws based on these findings. He clearly states that the views put forward are not to be regarded as final, but merely as working hypotheses which will serve as a guide for future research.

In the opening chapters he discusses at length the mode of production of symptoms, and enunciates his theories of the principle of the reflex arc and the law of fluctuation in living tissues. The present edition, therefore, while retaining the essential features of its predecessor, notably the carefully considered opinions culled from the author's wide clinical experience as well as the illuminating account of his own epoch-making researches on the cardiac irregularities, contains much new matter of a more philosophical nature. The appearance of this new edition is a fitting monument to the remarkable energy which enabled its author to find time to carry out his scientific observations whilst engaged in a busy general practice, and even during his long illness to persist to the very end in his endeavour to advance medical knowledge.

Spirometry.

Vital Capacity of the Lungs. By J. A. Myers, M.S., Ph.D., M.D., Assistant Professor of Preventive Medicine and Public Health, Medical and Graduate Schools, University of Minnesota. With an introduction by S. Marx White, B.S., M.D., F.A.C.P. London: Baillière, Tindall and Cox; Baltimore: The Williams and Watkins Company. 1925. Pp. 140. 16*s.* 6*d.*

The author of this monograph on vital capacity claims to be on his guard against too enthusiastic an attitude to this subject, and yet he says: "The time is at hand when all persons should know their actual vital lung capacities, just as they should know their actual heights and weights," and goes on to suggest the instalment of spirometers in public places, very much like the familiar weighing machines. Apart from this lapse the book does succeed in giving a good and balanced account of vital capacity in its historical relations and in connexion with health and efficiency, and of its variations in disease. The name of Dreyer is associated with vital capacity in regard to physical standards and a good account of his work is given. Here it seems that there is a definite field for vital capacity estimations, but its use in diseases of the respiratory and cardiac systems seems to be very limited. It is rather surprising to find the statement that "probably the only help we receive from it is in differentiating pneumonia from certain other acute diseases" in a book whose preface claims that the vital capacity test is regarded by most clinicians as a "valuable aid in diagnosis, prognosis, and the guidance of treatment of certain diseases of the heart and lungs." The former statement appears to be nearer the truth. An extensive bibliography and numerous tables will prove useful to those interested in this subject, but even allowing for the large number of tables the price seems excessive.

The War Horse.

Official History of the War: Veterinary Services. Edited by Maj.-Gen. Sir Layton J. Blenkinsop, K.C.B., D.S.O., M.R.C.V.S., Colonel-Commandant, Royal Army Veterinary Corps; and Lieut.-Col. J. W. Rainey, C.B.E., M.R.C.V.S. London: H.M. Stationery Office. 1925. Pp. 782. £1 1*s.*

Each special department of the army has been allowed to publish officially its own account of the work done during the war; that of the Royal Army Veterinary Corps has now been issued. Veterinary science has advanced to such an extent during the past few years, and now has so many specialised branches, that it was necessary to entrust the compilation of the work to those who had specially studied the individual divisions, and the editorial work, owing to limited space, must have been difficult. It has been done so well that this volume will remain a useful work of reference and as a monument to the wonderful work of the Royal Army Veterinary Corps. The varieties of animals and the varied conditions under which they had to be kept and fed gave those in authority in the R.A.V.C. an infinite number of opportunities for exercising their ingenuity, and when it is considered that more than 75 per cent. of officers and men engaged in the veterinary care and treatment of the animals were civilians newly apprenticed to military methods, the results obtained were little short of marvellous. The book begins with a chapter on the preparations for war and mobilisation, and goes on to describe what was done on each of the numerous fronts for the welfare of the animals. No part of the world where the British forces were engaged is omitted, and the book shows clearly the difficulties which were overcome in the management of the healthy and sick horses in the extremes of heat and cold. All who served in the war, especially those who had animals under their charge, will find this book exceptionally interesting and valuable.

Royal Dental Hospital of London.

Annual Report for 1924. Edited by A. T. Pitts, D.S.O., L.R.C.P., M.R.C.S., L.D.S. London: John Bale, Sons and Danielsson, Ltd. Pp. 154. 7*s.*6*d.*

The Royal Dental Hospital's annual reports were originally issued under the joint editorship of Sir Frank Colyer and Mr. F. Coleman in 1910, but lapsed during the war and were only revived last year. No hospital or school news is now included, and the reports are in book form and contain original articles and case records only. In the present volume Mr. J. G. Turner gives a description of the minute anatomy of the roots of teeth. He regards the apical segment of the tooth and the dentinal canaliculi as the danger areas in root canal treatment, and rightly condemns so-called immediate root-filling after extirpating the tooth pulp. A certain time is required for the separation of living from dead tissues, and infected tissue is pent up if the root canal is immediately occluded.

Mr. Turner also describes two odontomes, one of which, a suppurating epithelial odontome (multilocular cystic disease of the jaw), was removed intact by the intra-oral route, showing that even large tumours may often be removed in this way and a disfiguring external scar avoided. Mr. W. H. Dolamore gives notes of three patients admitted to a general hospital for persistent hæmorrhage from the gums. In one of these patients, a hæmophilic boy, the hæmorrhage was arrested by means of protagulin; in the other two the bleeding occurred from the gums around the teeth, and the teeth involved were removed and the liberated gum margins approximated with suture with satisfactory results. Mr. E. F. Ackery and Mr. A. T. Pitts record six cases of acute stomatitis occurring in patients suffering from blood diseases, all of whom died. Their serious condition was recognised on their attendance at the dental hospital, and in every case they were recommended for admission to a general hospital. Mr. H. Stobie contributes a lucid and thoughtful paper on the diagnosis and treatment of some of the common tumours of the jaws. He lays stress on the value of radiology as an aid in determining the surgical technique to employ, and we are glad to see that the time-honoured text-book sign of eggshell crackling in connexion with the diagnosis of dental cysts has been omitted and resiliency (a more exact and expressive term) substituted. The use of a metal probe or, better still, fuse wire (as suggested by Mr. E. D. Davis) for passing into a cavity prior to an X ray examination might have been mentioned. If the latter be used it coils up within the cavity and serves to delineate its size and extent. We cannot agree that the swelling of cysts of the mandible is always limited to the outer alveolar plate, and the statement that "glandular enlargement and fixation" are early signs of an epithelioma needs qualification. Mr. Pitts writes on post-normal occlusion, a type of mal-occlusion that is receiving a great deal of attention from orthodontists at the present time. This condition appears to be more common than formerly, and it is difficult to say whether this is due to rapid evolutionary changes which are taking place, to failure in the past to recognise the condition, or to its confusion with superior protrusion. Mr. Pitts also discusses the pathology of the central myeloid sarcoma, the myeloid epulis, and the fibrous epulis, and questions whether the last is related to the other two tumours. Mr. D. M. Shaw discusses the value of "anatomical articulation," and endeavours to show that extensive contact of the teeth in all positions of occlusion does not exist in the normal dentition nor after marked attrition has taken place, and that it is not desirable that it should exist. His experiments show that different types of articulators elicit varying results of the mandibular excursions, and he considers that more care should be taken in observing the actual movements of the jaw, so that their effect can be reproduced in constructing artificial dentures.

The reports are a valuable and attractive contribution to oral and dental surgery.

Clinical Biochemistry.

By Ivan Maxwell, M.D., M.Sc., Lecturer in Physiology and Biochemistry, University of Melbourne. Melbourne: W. Ramsay. 1925. Pp. 124. 12*s.* 6*d.*

This volume is the companion to Osborne and Young's "Practical Biochemistry," of which the second edition was reviewed in The Lancet of Sept. 20th, 1924. It is intended to publish a third member of this series, and the author points out that any omissions will be included therein. Osborne and Young's small book undoubtedly started a new era in practical text-books of biochemistry, and it is to be hoped that the companion volumes will maintain this high standard. The present issue deals with the clinical aspect of practical biochemistry; like the first part, it is interleaved. Unfortunately, Dr. Maxwell's book does not show the careful preparation of the companion volume. The copy sent for review has many misprints which have been corrected in ink. We trust that all the copies have been so corrected, since some of the mistakes might lead to serious errors. The usual subjects are dealt with—renal efficiency, glycosuria, gastric analysis, and the tests of functional capacity of the various organs. The descriptions are rather sketchy in parts; the author is perhaps ill-advised in including a chapter on the enumeration of red blood corpuscles, &c., at the expense of the more purely chemical analysis of the blood. Clinical hæmatology is not a biochemical subject, and the space allotted could well have been used to describe methods of air analysis and respiration, a branch not even mentioned in the book. The method of determining the blood-urea is described, but the non-protein nitrogen of the blood is not even mentioned. In the method chosen for the estimation of urinary diastase no account is taken of hydrogen-ion concentration. Insulin is simply mentioned by name, and no account of the various clinical biochemical tests associated with insulin therapy is given. On the other hand, the book has certain excellent qualities. The general arrangement is very good, and the descriptions are all quite clear. Undoubtedly the best chapter is that upon hepatic efficiency; here an admirable account of recent work is given, and in particular of the Van den Bergh reaction. If in the third volume of this series are included exact details of quantitative analysis, the whole should prove of great value. Dr. Maxwell's contribution is in itself a useful addition to biochemical literature.

La Pratique Chirurgicale Illustrée.

By Victor Pauchet. Vol. VII. Paris: Gaston Doin. 1925. Pp. 250. Fr.30.

The English translations of the six earlier volumes of this work have been reviewed in our columns. This one is compiled on the same lines. The non-operative treatment of fractures of the upper extremity forms an interesting section and is well worth perusal, though some of the apparatus used appears a little heavy. The removal of cancer of the thyroid is depicted by a series of drawings made from a difficult and extensive case. A considerable part of the book is concerned with gastric surgery. Most interesting is the account of carcinoma of the stomach. The author prefers a one-stage excision, but says that sometimes he is forced to a two-stage operation. There is some discrepancy in the statements on this question; on one page the two-stage operation is said to have many advantages, whilst on another all patients operated upon in this manner are said to be dead within a year. The author still employs the Murphy button in some gastric operations. An ingenious technique for staphylorrhaphy is described by Victor Veau. Virenque brings forward a procedure for the removal of facial wrinkles not likely to become popular in this country. The illustrations are unusually clear and suggest a marvellous agility in the surgeon who performed the operations from which they were drawn.

Operative Cystoscopy.

By E. Canny Ryall, F.R.C.S., Founder of, and Senior Surgeon to, All Saints' Hospital for Genito-urinary Diseases. London: Henry Kimpton. 1925. 70*s.*

This is a superb atlas of operating cystoscopy comprising 115 plates, nearly every one of which has six coloured cystoscopic views. Every conceivable phase of intravesical or urethral manipulation is described. The author must have had an immense experience to have obtained views of so many different conditions, and they have been portrayed by Mr. Thornton Shiells with a faithfulness to nature unsurpassed by any cystoscopic atlas emanating from abroad. Mr. Ryall has extended operative methods through the cystoscope to what must surely be near the limit and has modified most of the usual instruments to render his methods more easy of execution. A unique feature is that the descriptions appear in German and French as well as English. There is an all too short account of methods at the beginning of the book, which renders the reader eager for more information as to what are the end-results of intravesical operations and in what percentage of cases such treatment is suitable. The author must have made a great number of observations and have case-histories at his disposal bearing on these questions. We hope he may in the future be induced to commit them to paper.

THE MAYO CLINIC.

Collected Papers of the Mayo Clinic and the Mayo Foundation. Edited by Mrs. M. H. MELLISH. Vol. XVI. 1924 (published May, 1925). London and Philadelphia: W. B. Saunders Company, Ltd. Illustrated. Pp. 1331. 60*s.*

THE Mayo Clinic and the Mayo Foundation have, in this sixteenth issue of their annual volume, maintained their usual standard of interest. The book is a bulky one and contains 222 papers or abstracts of papers from the pens of 160 contributors, many of whom have achieved world-wide reputations. As is inevitable, some of the contributions are of ephemeral interest and a few were frankly not worth reprinting, but, taken as a whole, the volume gives an excellent view of the march of surgery during 1924. In general, the papers are brief, so that the collection of articles on a subject such as gastric and duodenal ulcer forms an interesting symposium within a reasonable space. Another group of papers of particular interest is that concerning the physiology and diseases of the gall-bladder. The systematic recording of cases has evidently been brought to a fine art by the Mayo Clinic, and the results of this are to be seen in several articles such as that on diverticulitis of the colon, in which are summed up observations on this condition made during the last 17 years. A large number of addresses of a more general nature appear under the names of the founders of the Clinic. The 11 pages occupied by W. T. Mayo's lecture on the Physiology and Pathology of the Blood in Relation to Surgery are packed with learning and wisdom, and demonstrate that the work of the Clinic is not likely to be marred by any narrowness of outlook. The volume appears to have been very well edited, and rare errors, such as a reference to "hydro-arthritis or glutton's joints," on p. 664, give no annoyance.

JOURNALS.

BRITISH JOURNAL OF OPHTHALMOLOGY. September–October, 1925.—To the September issue H. M. Traquair contributes a paper on Acute Retrobulbar Neuritis affecting the Optic Chiasma and Tract. This is a little-known condition. Attention was first drawn to it in 1912 by Roenne who tabulated ten cases, five of them personally observed. In the present paper the author gives notes of four new cases, one of them already published by himself in a series of papers in the first volume of the *British Journal of Ophthalmology* (1917) under the title Bitemporal Hemianopia, and at that time believed by him to be caused by abscess of the antrum. He now regards this particular case as one of a class which Roenne describes as "inflammatory or degenerative conditions which have their starting-point in the chiasma or tract, and form a group of certainly existing but little known primary lesions in this part of the visual path." He suggests that if exhaustive analysis of the field defects in cases of retrobulbar neuritis were more commonly practised cases of this type would be more frequently found than they are at present. As in retrobulbar neuritis of the usual type, the prognosis as regards recovery of sight appears to be excellent, but should be guarded in respect of later development of nervous disease.—D. J. Wood gives an account of two cases of non-traumatic cysts of the anterior chamber and R. E. Wright a cyst of the iris. These two notes describe a condition which is decidedly rare and the pathology of which is not completely understood. This number contains a condensed report of the proceedings of the convention of English-speaking Ophthalmological Societies held in London in July.——The October number opens with a biography of Sir William Bowman by R. R. James. The value of a paper by Miss Ida Mann on the Development of the Human Iris, which occupies the chief part of the issue, is much enhanced by copious and clear figures. Among other papers is one by H. Hartridge on Helmholtz's Theory of Accommodation. This should be read in connexion with an abstract by C. Goulden (in the same number) of E. F. Fincham's paper, the Changes in the Form of the Crystalline Lens in Accommodation.[1] By means of careful measurements taken with the help of the corneal microscope and slit-lamp Fincham finds that the general truth of the theory of Helmholtz is confirmed. The increase in the curvature of the lens surface, however, does not in all cases correspond to the increase in accommodation. The factor accounting for these variations Fincham finds in the combination of the elastic nature and the varying thickness of the lens capsule. H. Hartridge, in his paper, supports Fincham's views upholding the theory of Helmholtz in opposition to that of Tscherning.

INTERNATIONAL MALARIA CONGRESS.

THE First International Malaria Congress was held in Rome in the Exhibition Palace from Oct. 3rd to 6th. The various delegates, some representing governments or societies, were welcomed by Senator Ettore Marchiafava, the President, accompanied by various members of the executive.

Signor H. E. Benito Mussolini, Prime Minister of Italy, who officially opened the Congress, stated that the Italian Government had a great interest in this gathering in Rome. He referred to the epoch-making researches, which had led to our full knowledge of malaria, as a striking example of international coöperation, but admitted that the practical problems of prevention remained.

Senator Marchiafava, in his address to the Assembly, showed how the old Latin views on malaria approached and harmonised with modern concepts.

Biology of Malaria Parasites.

Prof. Marchoux (Pasteur Institute, Paris), who brought the greetings of France and her doctors, read a paper at the first meeting of the Congress on Unity or Plurality of the Parasites, dealing in turn with the arguments provided by the two schools of thought. The former, led by Laveran, had been impressed with the differences found in the parasites seen in the blood of Europeans infected in the tropics, containing small rings and crescents when abroad, but when they relapsed at home, showing only the large amœboid forms such as were regularly found in the blood of autochthones. The pluralists, including most malariologists, based their views largely on experimental observations, and interpreted the above findings in a different manner. In the mosquito the zygotes were different, the time of evolution varied, and if fed on carriers of one form, the same type was invariably transmitted to healthy subjects; similarly, injection of infected blood, now repeated thousands of times, followed the same rule. Culture in vitro had so far revealed specificity.

In the discussion which followed Prof. P. Muhlens (Hamburg) said that his own inoculation work, in general paralysis, confirmed an immutability in the transmission of all types, whatever the period of the year, and even in Germany in winter 70 transmissions of benign tertian had been made without change.

Prof. Swellengrebel (Amsterdam) referred to experiments he had conducted in Sumatra with *A. sinensis* and *A. ludlowi*, demonstrating a difficulty which might arise in cases of mixed infection and might lead to the erroneous view that a transformation of type had occurred.

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[1] Trans. Optical Society, 1924–25, vol. xxvi., No. 5.

Malaria Therapy in Psychiatry.

Prof. Auguste Marie (Paris) read a paper on this subject, in which he dealt with the thermic and visceral reactions, the precautions to be taken as to choice of case and the necessary blood controls when using malaria, and referred to the use of quinine and stovarsal—the former seeming to produce destruction of young asexual forms in the blood, whereas the latter rapidly affected the adult schizonts and the gametes. The results published in many countries, he said, showed that many thousands of cases had been treated and followed up, and whilst general paralysis of the insane was not cured by this form of therapy, it was proved that stabilisation took place with such persistent remissions that readaptation to family life and to social responsibilities were possible.

Colonel S. P. James (Great Britain) said that in England it had been found by experience that the relatives of patients objected to the direct inoculation of blood from paralytics, knowing that such were syphilitic, and that they feared what were called "neurotropic strains" of the virus. Also, by the use of the blood method the risk of injecting two kinds of parasites at the same time could never be completely eliminated. For these reasons it had been decided to inoculate only by means of mosquitoes; stocks of infected anopheles were kept for the purpose and distributed to those who needed them. The results by the natural method had been carefully observed in over 100 cases and were held to be better than when the blood method was employed.

Prof. M. Ghiron (Rome) read a communication on certain points of interest revealed during inoculations of general paralytics with malaria. Several months after the injection of subtertian he had reinjected some cases with benign tertian and found that a marked resistance had developed; not only was the hæmoclasis absent, as compared with controls which had not previously received subtertian, but there was no febrile reaction.

Anopheles and Malaria.

Dr. Massimo Sella gave a report on a new method for mosquito control in Italy by the acclimatisation of the larvi-phagous fish *Gambusia holbrooki grd.* He said that *complete* control of mosquito breeding could be obtained, even in drainage canals, provided there was thorough removal of surface vegetation; also, that great saving had been effected as petroleum was no longer required in some regions. Dr. Sella developed the theme of more intensive cultivation and distribution, and the need of special organisations, legal and financial support in this new method.

Dr. Etienne Sergent advocated all practical means of controlling malaria, from flight from the danger to disciplined control of those living in infected zones. He valued prophylactic quinine to keep people at their employment; he placed more stress on treatment and cure by quinine as a direct measure, and on all indirect measures based on propaganda work, first and chiefly amongst the children, and constant illumination of public opinion.

Colonel James said that the Malaria Commission of the League of Nations Health Committee had recommended: (1) the treatment of all cases as the first problem; (2) that it was not wise to use quinine as a prophylactic; (3) the killing of adult anopheles in houses; (4) that antilarval measures must have a very secondary place.

Larvicides.

Dr. M. A. Barber (U.S. Public Health Service) reviewed his work on Paris Green as a Larvicide. This arsenical poison was now widely used through the United States, and had been successfully employed in Palestine and Italy. It might be used through the entire season without harmful effects, had not been shown to affect animals or fish, and was employed diluted with 100 parts of dust as a suitable vehicle for wind conveyance over marshy areas covered with dense vegetation. Being almost insoluble in water, the light particles were held up on the surface-tension layer, and remained long enough to poison all surface-feeding larvæ.

Dr. L. W. Hackett (Rockefeller Foundation, Italy) issued a warning as to the varying qualities of Paris or Schweinfürth green on the market; some, he said, were merely aniline products. The U.S. Government had introduced a legal standard that Paris green must contain 50 per cent. of arsenious oxide.

The Alkaloids of Cinchona and Malarial Therapy.

Dr. A. Kaufmann (Switzerland), in a paper on the Synthesis of Cinchona Alkaloids, said that research was now so far advanced that the coöperation of the pharmacologist and clinician was needed by the chemist to test the pharmacodynamics of every product.

Colonel James and Dr. H. H. Dale, F.R.S., made a communication on the Relative Therapeutic Efficacy of Quinine, Quinidine and Cinchonine in Malaria. New tests had been made, using pure products, to determine the immediate therapeutic effect—i.e., the time required for complete disappearance of parasites from the blood. Results so far obtained showed that the curative effects of the three alkaloids was the same for all forms of malaria; in small doses cinchonine was slightly less effective than the others; there was no difference in toxicity save that quinidine had a more marked depressant action on the heart muscle.

Resolution.

An important communication was read by Dr. Fernando Perez, Argentine Minister in Italy, who proposed that in order to complete and consolidate the work of the Congress a permanent International Malaria Institute should be created in Rome with the scientific and financial help of all nations.

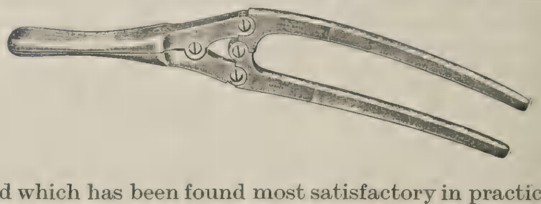
The President replied that the Italian Government viewed with favour the creation of such an organisation; it had great sympathy with the project, and was ready to give its moral and material support to this new institution.

The proposition was greeted with acclamation, and was subsequently adopted by the Council of the Congress, who formally expressed the desire that the Italian Government should make itself the mouthpiece of this wish to the Governments concerned in order to enable the project to be realised.

New Inventions.

INTESTINAL CLAMP.

In performing resection of the intestine, it is advisable to have a powerful clamp to crush the bowel before it is divided. The illustration shows a clamp which I have been using for the past 12 years, and which has been found most satisfactory in practice. The features of the clamp are: (1) its simplicity, (2) its power, (3) the area of bowel crushed is sufficiently wide to allow of the application of two ligatures between which the bowel is divided with a cautery. The clamp has been made for me by Messrs. Down Bros., Ltd., who have carried out my suggestion in their customary efficient manner.



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THE LANCET.

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THE SCHOOL MEDICAL SERVICE.

THE compulsory Education Acts have had two great effects. They have provided for every child a certain amount of learning at the price of reduced parental responsibility and freedom, and they have placed that child partially in the care of the State at a critical stage of physical development. The educational authorities aim at increasing the mental equipment of the pupils; the School Medical Service tries to increase their health and remove any causes of disease which may arise in the course of schooling. Whilst education may or may not be invariably beneficial, a betterment of children's health is wholly desirable. There is but one danger in a little physical betterment, and that is that it may be regarded as sufficient. At a small sacrifice of individualism there has been forged against disease a weapon whose power is incalculable, and there must be no resting on past achievements until that weapon is given full play. Sir GEORGE NEWMAN's report to the Board of Education on the Health of the School Child,[1] shows a proper appreciation of the admirable work that has been done in the past and reflects the still more proper discontent which animates the School Medical Service to-day. It contains lessons which must be learnt by the public at large and by public authorities in particular. The magnitude of the work is shown by the fact that in 1924 the average number of children attending schools under Local Education Authorities exceeded five million. The requirements of the regulations were fully met by the 1884 part-time or whole-time medical officers employed, and 2,420,000 children were medically inspected—that is to say, 48·6 per cent. of those who attended school during the year were examined. Of these about 700,000 were seen on account of some special illness or defect; of the remaining 1,660,000 who came up for routine examination, 19·8 per cent. were found to be suffering from some more or less serious physical defect which needed treatment then and there. In addition a considerable group, amounting to some 108,000 children, were found to suffer from physical or mental defects such as blindness, deafness, epilepsy, feeble-mindedness, tuberculosis, and crippling. For these children there were 544 special schools and sanatoriums accommodating over 43,000.

It has sometimes been objected that the routine work of inspection and compiling statistics is a waste of time. Sir GEORGE NEWMAN points out, however, that the routine work involved in the medical inspection of *all* children, healthy or sick, at certain prescribed stages of their school life is one of the fundamental principles of the whole enterprise. Nothing but chaos and waste, he believes, would ensue if this inquest of the nation's children were drifted through, in haphazard fashion, without record or report. The report before us is sufficient evidence of its own usefulness. Nor, to our readers at least, will any criticism of the time and labour and expense devoted to research need an answer, though Sir GEORGE NEWMAN supplies cogent ones. An example of the kind of research being carried on is the special investigation into the health of the rural child which was made in the spring of this year. This revealed much that needs reform in the incidentals of rural education and many regrettable results of poverty amongst the children of labourers and those in casual employment. Although it was found that there is no widespread decadence, and that on the whole there is probably improvement, it is clear that the remarkable progress in physical well-being which has taken place in the towns is not shared equally in the rural districts, and there is a substantial degree of impairment amongst rural children, especially at the ages of 6 to 12 years. On the whole, the country children are still ahead of the town children, but in some areas they are falling behind. Sir GEORGE NEWMAN's general conclusion is that although every year there appears to be the same tide of disease, the same burden of defect requiring treatment, there is undoubtedly a great and almost universal improvement in the *degree* of disease among children of school age. The death-rate at these ages is declining, and the gross forms of disease are steadily disappearing. "Medical care," it is stated, "has brought about an immense improvement in the discovery and practical treatment of the defective child, and thus has mended the particular child and stopped the evil effects of disease. But concurrently there has been little or no change in the causes and origin of disease in school-children . . . The young child comes to school already diseased. In 1924 38 per cent. of the entrants in London were found to require medical treatment . . . This clearly is home-produced and not school-produced. But, further, there is evidence that the physique of a number of children degenerates *while they are at school*." In a recent summary of school medical work [2] we drew attention to the deplorable hygienic conditions to be found in some schools. Lack of facilities for washing, inadequate lavatory equipment, and general uncleanliness were condemned as prejudicial to health and stultifying of that instruction in personal hygiene which should be an essential part of school medical education. We drew attention to the fact that in many schools children remained all day in the wet clothes and boots in which they arrived, and to the meagre floor space allotted to schools by regulations unchanged since 1870. It is satisfactory to find most of these abuses the subject of earnest recommendation to local authorities, though it is regrettable that such recommendation should still be needed.

There is an increasing desire on the part of parents to take advantage of treatment offered; but there remains a considerable leakage between the number of children requiring treatment and those who actually get it. More, it is suggested, might be done by many authorities to follow up, to make treatment available, and to prescribe the duties of their medical staff in such a way as to make it possible for them to concentrate on the untreated child. In many areas the personnel of the School Medical Service is too small to conduct anything more than the barest routine. The number of dentists is wholly insufficient. Of 1,766,000 children inspected by them in 1924, 67 per cent. were found in need of immediate treatment; but only 55 per cent. of these received it. It is stated that to establish a complete dental service for all school-children the number of dentists employed would require, at the lowest estimate, to be trebled.

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[1] The Health of the School Child. Annual Report of the Chief Medical Officer to the Board of Education for the Year 1924. London: H.M. Stationery Office. 1925. 1*s.* 9*d.*

[2] THE LANCET, 1924, i., 44.

The whole trend of medicine to-day is towards treating the underlying causes of disease rather than the symptoms. Certain established causes such as focal sepsis act early and are susceptible to rational treatment in infancy and childhood. From the barest commercial point of view, then, it ought to be possible to devote more than £1,220,000 a year to the work of the School Medical Service.

CONGENITAL SYPHILIS.

Perhaps one of the things which most attracts the notice of a British visitor to the children's hospitals of Paris is the frequency with which the diagnosis of congenital syphilis is made on what appear to be insufficient grounds. The recent conference on congenital syphilis in Paris, of which we give an account elsewhere in this issue (p. 1071), also brings out this striking difference between the points of view of two sets of pædiatricians. The list of diseases attributed to latent congenital syphilis includes such affections as chorea, mitral stenosis, exophthalmic goitre, and infantile paralysis, and greatly exceeds both in quality and quantity the result of experience in this country. It may be that congenital syphilis is a much more common disease in France than it is in this country, and there are certain statistics to bear out this contention. Prof. Marfan's figures, collected, it is true, in a sort of Poor-law institution where many illegitimate children are presumably to be found, go to show that 16 per cent. of all infants are definitely infected, while about 30 per cent. are probably so. In this country, on the other hand, figures collected by Dr. G. F. Still show that not more than 1 per cent. of all out-patients in a big children's department are suffering from congenital syphilis, as judged on clinical grounds alone, and he further quotes the results of the Wassermann reaction in the blood of young infants in an investigation in the East End of London where only 4 out of 677 cases were positive. Even this striking statistical difference will not, however, account for many of the views held by French authorities. Prof. Marfan's teaching on rickets, for example, is to the effect that the large majority of cases are due to congenital syphilis, and the difficulty arising with regard to negative Wassermann reactions in many of these cases of so-called masked congenital syphilis is met by the statement that the biliary pigment in the blood of new-born babies interferes with the hæmolysis involved in the test. Another somewhat dangerous point of view brought forward in support of the latent congenital syphilis theory is the fact that many of these cases respond to antisyphilitic treatment. This post hoc line of argument may be particularly misleading in dealing with a vague and heterogeneous group of chronic infections in which almost any therapeutic measure may at times secure a striking success.

On the subject of the treatment of congenital syphilis there is in general more agreement, although in the course of the discussion on this aspect of the problem there was a distinct tendency to give first position to the intravenous use of arsenical preparations and to place mercury as a rather poor third in the list—arsenic, bismuth, mercury. In this respect a recent publication of the results of the treatment of congenital syphilis in this country by Mr. John Adams is particularly interesting.[1] He has treated since 1917 164 consecutive cases in young babies at the Thavies Inn Clinic for pregnant women suffering from venereal disease. The mother's blood is examined on admission and treatment instituted at once if the pregnancy has not yet terminated. As soon as the child is born a specimen of blood is taken from the umbilical cord and also from the mother and sent for a Wassermann reaction to be performed. It was found that about 3 per cent. of pregnant women, although undoubtedly suffering from syphilis, gave a negative Wassermann reaction, and of the babies born of syphilitic mothers this reaction was positive in 51 out of 152 cases. The treatment adopted has been the intramuscular injection of galyl in glucose, commencing on the first day with 1·25 cg. and working up to 3·5 cg. in fortnightly doses. Altogether nine doses are given, the second one at the end of the first week. Combined with this are intramuscular injections of mercury in doses of $\frac{1}{6}$ gr. working up to $\frac{1}{3}$ gr. at fortnightly intervals and grey powder by the mouth. At the ninth and twelfth months courses of three injections of 3–5 cg. of galyl are given, and 1 gr. of grey powder daily for a month and repeated at the eighteenth month. Further treatment is governed by the progress of the case. During the last five years not one baby born alive has died in the hospital, and there have been altogether only four deaths in the whole period of eight years, while in the last few years there has been no still-born fœtus in the clinic. The effect of the treatment is to convert a positive Wassermann reaction in the infant into a negative one in an average period of 10 to 11 weeks; this has occurred in every case, a striking contrast to continental experience and to the reports of other workers in this country. Babies thus treated grow up into strong, healthy children with a mortality-rate actually below the normal for non-syphilitic children. Mr. Adams utters a word of warning against puncturing the superior longitudinal sinus for obtaining blood, and describes a very satisfactory method for getting it from the heel. His experience is that congenital syphilis, like syphilis in general, is becoming less frequent in this country.

CIVILISATION AND BLOOD PRESSURE.

High blood pressure is a subject of wide and perennial interest—an interest justified by the obscurity which still surrounds the condition. Speaking before the Academy of Medicine of Toronto on Oct. 12th, Lord Dawson of Penn referred to high blood pressure as an apparently increasing result of modern civilisation. Apart from nephritis, he considers the blame should fall on faulty metabolism, on anxiety, and perhaps on inborn traits. About the age of 46 a jump in blood pressure from 120 to 140 is not uncommon, and although raised pressure is not rare in thin people, the man who becomes too fat in middle life is most open to suspicion. At this age a general loss of flexibility may begin to show itself, and what Lord Dawson aptly called "a certain fibrositis of the mentality." How far a rise of arterial tension depends at first on circumstances is illustrated by a case which he cited of a barrister in whom the blood pressure was in two successive years reduced by the annual holiday from 140 to 120, but who failed to respond on the third occasion. It is, says Lord Dawson, the anticipation of work that plays so important a part at certain ages, especially in those who show a general vasomotor excitability and lack of adaptability. That such a predisposition exists was shown in an examination of 1500 students at the University of California, of whom fully 20 per cent. had high blood pressure. A similar examination was made by Lord DAWSON and others in four English schools, when it was found that 8 per cent. of the 659 children between the ages of 11 and 17 showed too high pressure, though the affected children appeared as healthy as the others. The group in which it occurred was one in which the boys and girls of almost 17 years of age were trying to pass examinations on which much depended, either for themselves or their parents. Many of them had a blood pressure of over 130 and in some it reached 150. Here the influence of anxiety was obvious.

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[1] Ante-natal and Post-natal Syphilis. By John Adams, F.R.C.S. London: John Murray. 1925. For private circulation. See also The Lancet, 1920, ii., 990, 999.

The American view of the importance of a small rise in arterial tension is illustrated by a somewhat popular treatise written by Dr. W. E. SADLER, of Chicago, and entitled "Americanitis."[1] It is clear that in the United States a man with a blood pressure of over 140 is looked at askance. Lord DAWSON does not go as far as to share the view there prevailing; but he states that a youth with this degree of tension should endeavour to find a salaried appointment. Whole families may show an increased blood pressure, and there may be no obvious results because work and surroundings are favourable. A great deal of the world's most important work is, in fact, done by those who suffer from hyperpiesis and it would be easy to exaggerate the alarming nature of small rises; their disastrous sequels have yet to be shown. Twenty years ago persons applying for life assurance policies commonly found themselves heavily loaded on account of the readings of the sphygmomanometer; yet we are informed that many experienced physicians to-day have records of continuous good health in such people, who have endured their high blood pressure without symptoms or obvious ill-effects. It is well known that the outlook is grave in cases with marked elevation of both systolic and diastolic pressure; but the importance of a pressure of 140 mm. in otherwise healthy young people cannot be estimated accurately yet. It often shows a state of mind and body which demands consideration of appropriate environment and work; but until full records have been obtained which clearly show some relation between moderate juvenile high blood pressure and early death, judgment may be reserved, and it seems undesirable to penalise or alarm those in whom such a condition is discovered.

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[1] "Americanitis—Blood Pressure and Nerves" By William G. Sadler, M.D., F.A.C.S. New York: The Macmillan Co. 1925.

LEAGUE OF NATIONS: MEMORIAL PRIZES FOR THE STUDY OF MALARIA.—In memory of Dr. Norman Lothian (see THE LANCET, 1925, i., 1159) and Dr. Samuel Darling (ibid., 1925, i., 1320), the two members of the Malaria Commission of the League of Nations who were killed in a motor accident near Beyrouth on May 21st, 1925, while investigating malaria conditions in Syria, the League's Health Committee has decided to create a Lothian Scholarship and a Darling Prize, which will be awarded periodically for the encouragement of malariological study. The Lothian Scholarship, for which a credit has been found in the budget of the Health Organisation of the League, will be awarded by the Malaria Commission to a selected candidate "whose course of study should be in conformity with the general programme of the Malaria Commission," while the Darling Prize (a medal or other reward) will be given to the scientist who "has carried out recent distinguished research work on a subject connected with malaria which comes within the general scope of the Commission's investigations." The funds for the latter foundation will be raised by private subscription.

Annotations.

"Ne quid nimis."

THE DENTAL BOARD.

IN his address at the opening of the ninth session of the Dental Board of the United Kingdom on Nov. 10th Mr. F. D. Acland, the chairman, dealt with three matters of considerable importance to the welfare of the dental profession. With regard to advertising, he said that very considerable progress had been made in carrying out the Board's duty of checking undesirable methods of announcing a dentist's practice. It was not only interesting but gratifying to find how willing practitioners were to conform to the wishes of the Board; the only proviso made was that all dentists should be on the same footing. This, of course, is reasonable, and the Board is endeavouring to ensure that all are treated alike, though naturally it is difficult to enforce exact uniformity and simultaneity of action. Some practitioners, he continued, desired that the Board should lay down hard-and-fast rules to which all should conform. There was much to be said on both sides. In a professional district and in a crowded shopping street, the question arose whether it would be possible to give sufficient definition of the difference in situation of premises as would at the same time afford a clear guide to dentists, and prevent the occurrence of numerous and difficult border-line cases on which the Board would have to make special decisions. Some of the general principles which the Discipline Committee have so far evolved are as follows: (1) Where, as is almost always the case, it is possible to have a brass plate reasonably visible at all hours at the entrance to premises, it is not also necessary to have a further announcement on a fanlight. (2) Where, as is sometimes the case, a projecting sign must be permitted, it is not necessary also to have announcements on the windows. (3) If there is an announcement on the windows, a projecting sign should not be allowed. (4) Windows should not be used to call attention to the extent of a dentist's premises. The Chairman suggested that dentists who received patients in the evenings might use a uniformly coloured plain lamp, either red, or, in districts where some doctors use red lamps, of some other colour, if they desired to distinguish their premises from those of doctors.

Dealing with the Board's scheme for assisting suitable students to qualify, Mr Acland recorded gratification that the scheme now seemed to be established, and was becoming better known amongst schoolmasters and parents. The applications for grants which were considered this autumn were in excess of the help available, with the result that it was possible to make a selection of the most suitable candidates. "There are some," said the Chairman, "who think that the Board is unwise, and is even acting harshly towards those who have to pay for the retention of their names on the Register, by taking steps just now when times are none too easy to add to the number of qualified practitioners. It must be remembered, however, that it will generally be four years before the students who are helped by the Board will qualify, and, further, I am informed that the number of students who are registering this year is certainly not more than those who registered last year, and may even be less. We shall probably be able to assist some 40 or 50 students a year, and if the quality of those assisted is high I believe that much useful work from the national point of view will be done in assisting them."

Dental health propaganda work has made good progress. Organisations of all kinds have shown appreciation of the Board's work. Bodies interested in children, such as the National Union of Teachers and the child welfare organisations; in nursing, such as the College of Nursing and Queen Victoria's Jubilee Institute of Nurses; in industrial workers, such as the Industrial Welfare Society and Industrial Health Education Council; and in general health, such as the National Association of Insurance Committees, have all been willing to coöperate, and it cannot be doubted that much good has already resulted. It is hoped, continued the Chairman, that Women's Institutes also, through the interest of their National Federation, will soon give their aid, for they are often the best means of approach to those who count most in our villages. The Girl Guide movement is also helping, and the Chairman welcomed particularly the coöperation of the rural community councils. By the help of these and other organisations, and in other ways, the Dental Board has already accomplished more than it ventured to hope for a year ago.

A LILLIPUTIAN GARDEN.

THE list of organisms growing in the National Collection of Type Cultures.[1] of which an account appears on p. 1086, is even more fascinating than a catalogue of garden flowers. Their sources are far afield. There are strains of *Aspergillus fumigatus* isolated from penguins, pigeons, black swans, golden eagles, water hens, flamingoes, and owls; there is one of Metchnikoff's original strains of *Lactobacillus bulgaricus;* there are strains of acid-fast bacilli isolated from guinea-pigs inoculated with butter samples in 1912; there are organisms obtained from a wilted pæony, from a tuberculous terrapin, and from the spleen of a skunk which lived, and presumably died, at a skunk farm in the North of England.

It may be observed that those who take up gardening are first intent upon a show of flowers, but afterwards think nothing of such simple pleasures, but are for ever collecting, classifying, dividing, transplanting, manuring, and improving. Of all gardeners the most skilful is the bacteriologist. To him it is given to revel to the full in " the purest of human pleasures "; but whereas Bacon considered this impossible in an area of less than 30 acres, to-day it can be done (out of the wet) in 30 feet. In a small space collection, classification, division, and tender culture of all known microscopic plants is being pursued with zeal and with profit by men and women who are fortunate indeed in their choice of occupation. And the extent of their efforts may be measured by the fact that at the Lister Institute there are well over two thousand living strains, both good and bad, gathered together under one roof.

HOSPITAL ENDOWMENT BY INSURANCE.

Mr. James E. Kavanagh, a prominent official of a New York insurance company, has recently suggested a new application for the principles of insurance—namely, the endowment of universities, colleges, and hospitals. In a speech delivered in Kansas City and summarised in the pages of the *Agents' Journal and Official Gazette*, he states that the United States contain nearly 800 universities and colleges suffering from lack of financial support, only half the money for their maintenance being found by the students, the remainder being a charge upon public and private generosity. He recommends that the difficulty be removed, or at any rate lightened, by students insuring their lives on the endowment plan in favour of the institutions to which they belong. Alternatively, he suggests that they should be canvassed with a view to initiating some organised scheme under which they take out policies in favour of those institutions, the students paying the yearly premiums. Mr. Kavanagh quotes the example of a Roman Catholic educational institution which in 1900 "took out 100,000 dollars of 20-year endowment assurance on the lives of 20 students (that is, 5000 dollars each)," and by 1920 " had drawn 90,000 dollars matured endowments, 10,000 dollars in two death claims, and 5000 dollars bonus."

The idea that our hospitals, established by ancient benefactors, should now be re-endowed by the organised insurance of their medical students will no doubt be noted by those who, in strenuous competition, direct the financial fortunes of these establishments. No doubt, also, the ingenuity of the insurance companies will be equal to the task of working out details, for, as our contemporary observes, the 100,000 insurance agents in this country will not only be furthering a noble work on behalf of our hospitals and other benevolent institutions, but will also be promoting the interests of themselves and their respective offices. They must not expect too much from hospital patients, medical students, or young practitioners engaged in the first struggle to establish themselves; moreover, their chief interest is likely to lie in the educational rather than the charitable side of their medical school. These have the wish to help, but seldom the wherewithal. The idea may fructify amongst the charitably-minded members of the public to whose benevolence so many appeals are already addressed, or amongst members of the medical profession who have happily passed their first struggles and have attained prosperity. Observers of educational conditions in America have noted the remarkable sums which the alumni of a trans-Atlantic school, college, or university will contribute to the support of their *Alma Mater*. In this country it may be that the existence of ancient endowments has made the formation of a similar tradition a less obvious course. But the ancient endowments are sadly inadequate to-day.

ANTITYPHOID AND ANTICHOLERA INOCULATION IN EUROPE.

Dr. Louis Poncet, the champion in France of the medical use of Esperanto, has shown the potentialities of the " auxiliary language " in a very interesting way by his monograph on the practice of prophylactic vaccination against the typhoid group of diseases and cholera in 28 European countries.[1] The statistics were extremely difficult to obtain, and even more so to compile, including, as they do, figures attained by an exasperating diversity of methods and results calculated on widely different scales, and texts of legal enactments where the meaning was often obscure even after close study. The figures are almost certainly less than they ought to be, even in countries where notification is strictly in force, and several are missing, but nevertheless the work gives a valuable comparison both of the application and the results of these prophylactic measures in the principal countries of Europe. The countries are classed under three heads: (1) those where these inoculations have never been compulsory; (2) where they have been widely used, although not legally enforced; and (3) where they are enjoined by law. The second category contains our own country and Ireland only, while the first has some rather surprising names. Everyone knows that there is no hygienic legislation in Albania, and no one expects any great sanitary enterprise from Portugal, but it is striking that neither Switzerland nor Denmark, two of the most civilised States in the world, considers these precautions necessary. Carriers are very severely dealt with in Denmark, and in Switzerland the inhabitants coöperate with the doctors by accepting wholesale vaccination during epidemics. Norway owes its comparative immunity to the care it has taken over its water-supplies.

In Great Britain antityphoid and anticholera inoculation has always been voluntary, even in the Army and Navy, but in practice it became almost universal in both services from 1915 onwards. Even as early as 1909 most of the troops who served abroad were protected. Among our civil population, except for those employed in medicine, nursing, and sanitation, hardly anyone ever applies for vaccination, but our typhoid incidence has fallen nevertheless from 8200 in 1912 to 3800 in 1921. The Anti-Vaccination League comes in for some sharp criticism from Dr.

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[1] Catalogue of the National Collection of Type Cultures. Second edition. Published for the Medical Research Council (Special Report No. 64) by H.M. Stationery Office. Pp. 67. 2s.

[1] Vaccination Obligatoire ou Vaccination Facultative contre les Maladies Typhoïdes et contre le Choléra en 28 pays d'Europe. Essai d'enquête internationale par l'Esperanto. Lyon: Office Espérantiste, Rue Gerrandière, 30.

Poncet for its work in hindering the spread of these beneficial measures. In Ireland, where the hostility to vaccination is even greater, the typhoid mortality was 21 per 10,000 in 1923.

Of the countries that come under the third heading, Germany is probably the most important. Vaccination against typhoid has long been compulsory in the Army, but is still optional for civilians, though carriers are pursued vigorously and even to the point of compulsory operation. In other countries, especially in Eastern Europe, where typhoid is a serious scourge, inoculation is compulsory in times of epidemic, and permanently in the armies. The author devotes a long chapter to the progress of these measures in France, where they have always been optional for the civil population; energetic propaganda during the war induced a considerable number of civilians to undergo inoculation. He has published in full numberless orders, circulars, advertisements, and statutes from all sources, and has given every chart and table of figures it was possible to obtain.

Apart from the significance to public health of this laborious collection of statistics, they have probably real value in showing the practical use of Esperanto as a medium of intercourse in international medicine. Dr. Poncet is obviously much more interested in Esperanto than in antityphoid inoculation, and has written a lengthy chapter in its praise; but even he could hardly exaggerate the benefits that the general adoption of some universal language by medical societies throughout the world would confer on medical science.

REDUCED PRICE OF BLUE BOOKS.

SOME months ago we announced [1] an offer by the Ministry of Health to supply public authorities and medical officers with copies of the Registrar-General's statistical reviews at a reduced price. The offer was conditional on the subscription being taken up for five years and on a sufficient response. We understand that although the response has not reached the expectations which had been formed, the degree of success realised has been such as to obtain Treasury consent to the confirmation of the arrangement. Subscribers will accordingly be furnished with copies of "Tables, Part I.—Medical" and "Text" volumes of the Statistical Review for 1924 and future years within the subscription term at the reduced price of 12*s.* 6*d.* per annum. The subscription list cannot be kept open indefinitely, and the higher price will be charged to all purchasers who do not enrol themselves as subscribers before the subscription list is closed. Early application is therefore advisable on the part of those who, not having already subscribed, desire to obtain the benefit of the reduced price.

TONSILLECTOMY FOR RHEUMATIC AFFECTIONS.

THE doctrine of focal infection, as applied to the rheumatic affections, appears sometimes to have been put into practice with more fervour than discrimination, and the number of healthy teeth sacrificed on the altar of this new faith must be very large. But there is much to be said in favour of it, notably in the case of the tonsils, and a paper by Dr. Reidar Gording in *Norsk Magazin for Laegevidenskaben* for September illustrates what can be expected of tonsillectomy, when the indications for it are kept within narrow and well-defined limits. Dr. Gording's material consisted of 260 rheumatic patients, most of whom were treated at the Sandefjord hydropathic establishment. They suffered from one or other of the following forms of rheumatic disease: (1) primary, chronic polyarthritis with an insidious onset; (2) chronic rheumatism limited completely, or almost completely, to the muscular and nervous systems; (3) chronic polyarthritis secondary to acute rheumatic fever; (4) acute articular rheumatism with serous effusions which, as a rule, developed in several joints and was often associated with endocarditis. The patients in these four groups were further classified, according as there were or were not signs or a history of disease of the tonsils. There were 93 patients who belonged to the tonsillar group, and whose average age was 27 years, and there were 167 who belonged to the non-tonsillar group and whose average age was 44 years. Tonsillectomy was not attempted in this group, and it was practised with discrimination in the tonsillar group, only 40 to 50 of the patients in this group being operated on. Only in 34 of these cases was the observation period after the operation long enough to warrant drawing conclusions as to its effects. In 25 of these 34 cases the rheumatic disease had developed more or less directly after an attack of tonsillitis or peritonsillitis. In eight other cases there was a history of recurrent attacks of sore throat and abscesses associated with an exacerbation of the rheumatic condition. Only in one case was tonsillectomy performed solely on the indications afforded by an examination of the tonsils. In two cases the rheumatic disease had lasted only four months, and in four it had lasted about 15 years. The average duration of the disease was about four years. In 22 of the 34 cases the patients stated that the tonsillectomy definitely represented a turning point in their illness; in the remaining 12 cases no benefit could be claimed. In the course of a long discussion of the literature of the doctrine of focal infection, Dr. Gording points out that two courses may be followed: the surgeon may make a clean sweep of the tonsils of every patient with signs of rheumatic disease and then count up his gains; or he may follow the course pursued by Dr. Gording and perform tonsillectomy only in those cases in which a more or less definite relationship between the tonsils and the rheumatic affections can be established. At first sight the latter course might seem the most reasonable and plausible. But is it? With careful classification of all the cases before operation the wholesale procedure might well yield more valuable data than the pick-and-choose method, and that without depriving the individual patient of the chance of rapid improvement following a not very serious operation.

LIPIODOL FOR CEREBRAL LOCALISATION.

THE use of lipiodol injections for the localisation of tumours of the spinal cord is now firmly established. Prof. Sicard, who devised this procedure, has now turned his attention to the possibility of getting this opaque iodine-containing oil into the ventricles of the brain, and Rimbaud, Lamarque, and Janbon [1] have recently reported a successful application of Sicard's method to a case of general paralysis in which they obtained X ray pictures of all the ventricles. It is obvious that direct intraventricular injection of lipiodol presents too much difficulty and risk to be a feasible proposition, and Sicard's method has been to use an emulsion of cerebro-spinal fluid and lipiodol of a low density which rises to the highest point of the nervous system bathed by this fluid. The technique adopted was to perform lumbar puncture in the ordinary way with the patient sitting, and allow about 10 c.cm. of cerebro-spinal fluid to escape. A glass syringe is then fitted to the lumbar puncture needle and a further 5 c.cm. of fluid withdrawn. The syringe is detached and a stylet placed in the needle to prevent escape of the fluid, while 5 c.cm. of low density lipiodol are drawn into the syringe and well shaken until an emulsion is produced. This is then slowly injected through the lumbar puncture needle into the spinal canal. Sicard's original technique was very similar, except that his emulsion was made in a separate vessel by stirring with a glass rod. An X ray picture of the skull taken one hour after injection, during which time the patient remained sitting, failed to show any abnormal opacity, but in a second picture taken three days later definite shadows could be seen in the regions of the lateral and third ventricles. The patient showed no ill-effects whatsoever, even when leaving the hospital and taking a tram journey after the first radiograph. Encouraged by their results the authors made a second injection of lipiodol eight days later and obtained very striking radiographs at the end of 48 hours. These showed the outline of the lateral, third, and fourth ventricles, and also extraventricular shadows corresponding to the fissure of Sylvius and the insula. Such an addition to the radioscopy of the brain opens up great possibilities in the localisation of tumours and might also possibly assist in determining whether the intraventricular injection of serum is necessary in cases of cerebro-spinal fever where basal adhesions prevent the upward passage of serum injected by the lumbar route. It is also suggested that the close contact of iodine with the brain may have a possible therapeutic application in cases of cerebral syphilis.

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[1] THE LANCET, August 8th, p. 294.

[1] Bulletin de la Société des Sciences Médicales, Montpellier, September, 1925, p. 426.

UNIFORM NOMENCLATURE OF DISEASES.

A "Nomenclature of Diseases" was first issued in 1869 by the Royal College of Physicians of London, the aim of the compilers being, as stated in the preface, "to prepare a nomenclature suitable to England and to all countries where the English language is in common use." Half a century later American medicine found a similar need and the first report of the Committee on Mortality Statistics was submitted at the Cincinnati meeting of the American Public Health Association in October, 1916, and appeared in *Public Health Reports* (Sept. 22nd, 1916. Reprint No. 363). A second report was presented to the Washington meeting in 1917 (P.H. Reports, Sept. 28th, 1917. Reprint No. 440). A third report of the Committee, over which Dr. Haven Emerson presides, is before us now.[1] The natural desire of every public health administrator to see an accurate system of death certification uniform throughout the United States meets with the unsolved difficulty of the federal aims for uniformity infringing the supposed rights of the several States. When this has been adjusted the next step should be an easy one, when the Royal College of Physicians undertakes its decennial revision, due in 1928. It should then be possible, in agreement with the United States of America, to prepare a revised "Nomenclature" suitable for all the English-speaking peoples. Such a revision would concern the sectional headings as used in the table of contents to the "Nomenclature" (fifth edition, 1918), as well as the titles adopted to distinguish the several diseases. From a survey of the conclusions reached by the American Public Health Association, there should be no difficulty in bringing about agreement on one principal title. The American report includes an approval of a large number of synonyms, some of which have been discarded by the Royal College of Physicians after careful consideration. Most of the remainder of the approved synonyms may be regarded as subordinate to the principal titles and not as substitutes. The American Committee have to keep in mind the practice of the Bureau of the Census and of the various State and Municipal Registration Offices. It is the "International List of Causes of Death" which should form the basis for agreement with the next revision of the "Nomenclature" of diseases by the Royal College of Physicians.

PARATYPHOID IN SWITZERLAND.

Dr. W. Silberschmidt,[2] of the Institute of Hygiene of Zurich University, remarks that though a knowledge of paratyphoid bacilli dates back to nearly 30 years ago, when they were first described by Achard and Bensaude in France and subsequently by Schottmüller in Germany, who was the first to distinguish paratyphoid A and B bacilli, not much has been published on the subject of paratyphoid fevers in Switzerland. During the period 1920–24 340 cases of paratyphoid were notified to the Swiss federal authorities, 45 being reported in 1920, 56 in 1921, 79 in 1922, 115 in 1923, and 45 in 1924. Like other infectious diseases of the alimentary canal, most of the cases were observed in the summer and the smallest number in the first three months of the year. The value of these statistics, however, is not very great, as they are far from complete, notification of paratyphoid not being compulsory throughout Switzerland and the diagnosis often not being made in the absence of bacteriological examination. During the period 1920–24 cases of paratyphoid were observed in almost all the Swiss cantons. The most striking feature was that they were almost always isolated cases. The towns of Bâle and Zurich, however, were exceptions, as they headed the list with 53 and 31 cases respectively during the period mentioned, with a maximum of 36 and 18 in 1923. This does not mean that these two towns were more affected than the rest of Switzerland, but the larger number of notifications merely indicates that notification of contagious diseases was carried out more conscientiously and greater use was made of bacteriological examination at Bâle and Zurich than elsewhere. In the canton of Zurich bacteriological examination of the stools, urine, and blood is carried out gratuitously in all cases suspected to have typhoid, paratyphoid, or infectious enteritis, more than 800 examinations of the kind being made annually at the Institute of Hygiene. About 20 years ago an epidemic of paratyphoid caused by consumption of salt-water fish occurred at Zurich. Formerly many cases were due to consumption of meat from diseased animals, but at present, owing to stricter supervision of the slaughter-houses, the number of these cases has diminished. As in typhoid fever, contamination may take place by contact, but according to the Swiss statistics this mode of propagation is not very frequent in paratyphoid.

THE second Victor Horsley memorial lecture will be delivered by Mr. Wilfred Trotter in the house of the British Medical Association on Friday, July 9th, 1926.

Rebuilding of Middlesex Hospital.—In order that the rebuilding may begin, the west wing of Middlesex Hospital will be closed in January. The governors have acquired an old Metropolitan Asylums Board infirmary in Cleveland-street, a few hundred yards away, to which the wards in the wing will be removed. This "Cleveland-street Annexe" has had to be given a new roof and new floors, to be drained and replastered, and it has now to be completely equipped as a hospital with two operating theatres and all the necessary apparatus. It will accommodate 200 patients, and as soon as they are removed the reconstruction of the old hospital will begin. About £212,000 has now been received towards the £500,000 that the work will cost.

Fellowship of Medicine and Post-Graduate Medical Association.—Mr. G. R. Girdlestone will lecture on Tuberculosis of the Spine on Monday, Nov. 23rd, at 5.30 P.M., in the Lecture Hall of the Medical Society of London, 11, Chandos-street. All members of the medical profession are welcome. The following courses begin on Nov. 23rd: Medicine, surgery and gynæcology at the Royal Waterloo Hospital; nervous diseases in the out-patient department of the West End Hospital, 73, Welbeck-street, and a late afternoon course (4.30 to 6 o'clock) for the convenience of the general practitioner at the London Temperance Hospital. On Nov. 30th to Dec. 13th the Infants Hospital will hold a special course occupying the afternoons only. The Hampstead General Hospital has also arranged a late afternoon course for the convenience of the general practitioner from Dec. 7th to 19th, covering all branches of medicine, surgery, and the special departments. There will be a course in dermatology at the Blackfriars Hospital for Diseases of the Skin from Dec. 7th to 19th. Instruction will be given in the out-patient department, and venereal clinics will be held twice weekly. A copy of each syllabus and the Fellowship general course programme will be forwarded on application to the secretary, 1, Wimpole-street, London, W. 1.

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[1] Report of the Committee on the Accuracy of Certified Causes of Death and its Relation to Mortality Statistics and to the International List. Vital Statistics Section of the American Public Health Association at its meeting in St. Louis, Mo. Public Health Reports, Oct. 2nd, 1925.

[2] Revue Médicale de la Suisse Romande, 1925, xlv., 489.

Modern Technique in Treatment.

A Series of Special Articles, contributed by invitation, on the Treatment of Medical and Surgical Conditions.

CXLVIII.—CHRONIC NASAL DISCHARGE IN INFANTS.*

Coryza Neonatorum.

ACUTE rhinitis in infants is of importance, because this affection may produce intranasal changes with a chronic discharge. Moreover, when older children are brought to us with "chronic catarrh," which is said to have begun with "a cold in the head" at or shortly after birth, a knowledge of the varieties of coryza neonatorum assists in elucidating the pathogenesis and in suggesting suitable treatment in each case.

There are three varieties of the acute rhinitis from which an infant may suffer shortly after birth:—

1. Coryza neonatorum simplex, which is due to air-borne infection and which resembles the cold in the head of adults.

2. Coryza neonatorum blennorrhoica, in which the discharge is profuse and purulent from the onset and is caused by leucorrhœal or gonorrhœal discharge in the mother's vagina at the time of birth; the nose is infected directly or from the eye through the naso-lacrymal duct.

3. Coryza neonatorum syphilitica, the nasal symptoms of which are manifestations of the secondary stage of inherited syphilis.

At an early period of the illness it may be difficult to determine which of these affections is present. It is usually found, however, that when a healthy infant contracts coryza after birth the symptoms appear later, are less severe, and of shorter duration. In the blennorrhœal variety the onset within the first day or two of life of an abundant and persistent discharge of pus, sometimes containing gonococci, and the swelling of the nose and crusting of the nostrils are outstanding features. Snuffles may be the first and for several weeks the only sign of a syphilitic infection. Confirmatory evidence of the existence of this diathesis is supplied by the characteristic signs on the buttocks, around the anus, and at the angles of the mouth. This specific coryza differs from the other varieties also in that the nose is drier and the nasal discharge is thicker and tends more to crust.

Coryza neonatorum, whatever its origin, is always a serious ailment owing to the swelling of the lining membrane of the nose and accumulation of secretion which prevent nasal respiration. The instinct to breathe by the nose is strong and mouth-breathing is not readily adopted, so that a constant tendency to suffocation is produced. The nasal obstruction interferes also with sucking, which has to be stopped at very brief intervals to allow of breath being taken. The efforts to obtain a sufficient supply of air and food cause rapid exhaustion, and when to this are added complications in the larynx and chest owing to an extension of the inflammatory process and the low vitality of the majority of these little patients, the outlook becomes extremely grave.

The indications in coryza neonatorum are: to maintain the strength, diminish the catarrh, improve the nasal patency, guard against infection of the conjunctiva if it has escaped, and treat any underlying dyscrasia. It is necessary to act promptly. Spoon-feeding or a tube must be used. If the inspiratory efforts tend to cause aspiration of the tongue the infant must not be laid on its back. The crusts filling the nostrils should be softened with warm almond oil or paroleine and removed. The pus and mucus in the nasal fossæ should be liquefied by instilling at intervals with a medicine dropper a few minims of a warm solution of bicarbonate of soda (3 gr. to 1 oz.) or other alkaline detergent. Great care must be taken that the fluid does not reach the naso-pharynx in any appreciable amount owing to the danger of causing otitis. When the discharge is thinned it should be mopped or sucked out of the nose by means of an all-rubber pear-shaped syringe having a long tapering end. The catarrh is best treated by silver preparations. The nitrate is most in favour instilled or used as a paint (2 per cent.) and less often as an insufflation (2 parts with talc 100 parts). Argyrol (10 per cent.), protargol (4 per cent.), collosol argentum, &c., are also recommended. If obstruction is great owing to swelling of the mucous membrane the passages may be painted every two hours with adrenalin solution (1 in 10,000). Cocaine is not admissible except in weak solutions (½ per cent.) and at long intervals, and menthol has produced fatal glottic spasm in babies. The skin of the nostrils and upper lip should be smeared with cold cream in order to counteract the tendency to excoriations and eczema.

In congenital syphilis constitutional treatment is of first importance; the local measures outlined above, or, if considered preferable, a paint of colloidal mercury or insufflations of calomel and sugar (1 in 25) may be employed. When there is tendency to dryness of the nose tampons soaked with diluted Mandl's solution (iodine gr. 3, iodide of potassium gr. 12, glycerine 1 oz.) may be introduced.

Osteomyelitis of the Superior Maxilla.

Osteomyelitis of the superior maxilla causes a variety of nasal suppuration occasionally met with. This affection in most cases sets in suddenly one to three weeks after birth, with general disturbance and unilateral local signs. Of the latter, the principal are swelling of the eyelids, cheek, alveolus, and palate on the affected side; formation of an abscess below the inner angle of the eye; and discharge of pus from the eye, nostril, and alveolus. Later, a tooth protrudes through the swollen alveolus and being loose is easily removed. Access is thus obtained to a comparatively large cavity containing pus and often communicating with the nose. This cavity is a dental sac, but it has been repeatedly mistaken for the antrum—which in early life is smaller than the sac—and the affection has been described as empyema of the antrum of Highmore in infants. Areas of bare bone may be detected in the alveolus and outer wall and floor of the nose; and during the later course of the disease sequestra are extruded. In some cases that have succumbed the whole upper jaw has been found necrosed. Metastases occasionally take place. The disease has been attributed to various causes, but the most probable is a blood-borne infection.

In the early stages of the disease special attention should be paid to nutrition of the infant in order to help it to withstand the effects of a long and debilitating illness. Free escape should be provided for purulent collections, but it is rarely necessary to incise the skin below the eye, and if possible this should be avoided. A tooth projecting through the gum should be removed. The patient may come under our care when there is merely a purulent discharge from the nose, alveolus or a sinus. Search should then be made for sequestra and their removal effected provided this does not entail a severe operation, which is badly borne and liable to be followed by disfigurement.

A. BROWN KELLY, M.D., D.Sc.Glasg.,
Consulting Surgeon for Diseases of Throat and Nose, Victoria Infirmary, Glasgow.

NUNEATON: CALDECOTE HALL. — The Central Council of the Church of England Temperance Society announces that on Tuesday, Dec. 8th, at 1 P.M., Sir William Joynson-Hicks, Bt., will open Caldecote Hall as a home for cases of certain types of functional nervous disorders.

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* An article by Mr. Brown Kelly on Chronic Nasal Discharge and Sinusitis in Children will appear in THE LANCET next week.

Special Articles.

ROYAL COMMISSION ON LUNACY AND MENTAL DISORDER.

The Commission resumed its sittings, after the summer interval, on Nov. 10th, Mr. Hugh Macmillan, the Chairman, presiding.

Evidence of Sir Maurice Craig.

The first witness was Sir Maurice Craig, lecturer in psychological medicine at Guy's Hospital and hon. consulting neurologist to the Ministry of Pensions. He said he was for 15 years assistant physician to Bethlem Royal Hospital, and for a year was an assistant medical officer at the West Riding Mental Hospital, Wakefield.

Certification or Notification.—Sir Maurice Craig declared that the Lunacy Acts of 1890–91 were intended to protect the liberty of the subject, but in effect they had interfered with the liberty of persons intending to use them. Medical treatment took only a secondary instead of a primary place. No branch of medicine had been so trammelled by legal enactments as had psychological medicine, hence its progress had been slow, and many medical practitioners were shy of taking it up. In connexion with the certification of people of unsound mind the legislature had placed an obligation on the medical man which had nothing to do with medicine. Certification, indeed, he regarded as an embarrassment to medical science, as it confused the relationship of the physician to the patient, and his own view was that it was responsible for much recoverable mental disorder being permitted to become chronic before suitable treatment had been entered upon. Often mental disease was of slow development, the patient was conscious of his gradual mental failing, and dreaded that he might become insane. He needed to be reassured and have appropriate treatment early. Some medical men were afraid of undertaking treatment of these cases, the conditions attending certification acting as a deterrent. Yet it was practically unknown for a person to take action against a medical man for malpraxis when certification had not been reached. He said it was not surprising that medical men were refusing, in increasing numbers, to sign certificates of lunacy, the reason given being that they did not know what insanity, in the legal acceptation, meant. Sir Maurice Craig said the harm done by certifying patients in the early stage of their illness far outweighed any advantages. He would like to see certification abolished, at least temporarily; this would do much to bring mental disease into line with physical disease. Mental patients could be placed in three categories: (1) the willing and coöperative, (2) the passive and indifferent, (3) unwilling and hostile patients who demanded their freedom. One of the results of the temporary abandonment of certification would be, the witness considered, a large proportional increase in cases in the first category, as patients would soon find that application for treatment of their mental condition was not likely to endanger their personal liberty. Cases in this first class should certainly be treated in special hospitals or clinics, buildings which were not even in the same grounds or precincts as properly named mental hospitals. A non-volitional patient should be granted the same freedom from certification as a willing one, at least for such a period as would make possible his recovery. Patients in the third category should continue to be treated in the same kind of institution as the present mental hospital, but under some form of provisional notification or provisional certification at first. He agreed with borough or county hospitals being permitted to take voluntary patients, and added that until such time as fresh accommodation could be found the non-volitional group of cases should be admissible to those institutions without having to be certified. He favoured the perpetuation of licensed houses, and thought the willing cases should be able to go to them for treatment on their own written request without it being necessary for them to apply to the central authority for permission. Sir Maurice Craig thought it was desirable to permit, by legislation, non-volitional cases to be treated on notification only—i.e., short of certification—while the unwilling group could be under some form of provisional certification. Where patients were given the choice they usually preferred private single care; he would himself.

Mental Symptoms Associated with Bodily Illness.—He stressed the necessity of recognising the acute mental conditions which were associated with bodily illness, such as pneumonia. He would have a routine inspection of all nursing homes, ordinary and special, and would like this largely to take the place of so much inspection of the patient. At one time he did not favour this supervision being carried out by the Board of Control, as he then considered that body was too much steeped in the traditional treatment of mental disorder; but he now appreciated how much the Board had taken up modern views on the subject, and thought it was quite fitted to undertake this supervision, including cases in the early stage of mental illness. Still, he thought the medical side of that Board should be strengthened, as contrasted with the legal constituent. At Guy's Hospital there was one neurological department, and in that were included cases of early mental disorder. This did away with a reluctance on the part of patients to attend an obtrusively mental clinic. The activity of this department was steadily increasing.

In answer to a question by Sir Humphry Rolleston, the witness said he felt himself in a difficulty when he had a case of mental disease as a sequel to pneumonia, because though from the hospital standpoint the patient was regarded as primarily suffering from pneumonia and the mental trouble was secondary, that was not so in the eyes of the law. Yet it would be a very serious step to certify such patients, especially in view of the detrimental effect of the certification on their subsequent life. Asked whether he advocated a measure to afford further protection to the medical man dealing with cases of insanity, Sir Maurice Craig said he personally would not seek such a measure, because if he were charged with a wrong procedure in such a case it would merely mean he was being charged with behaving like a human being. He thought increased research would show that more and more mental states had a definite causal relationship with physical disorders. He had always encouraged the idea that mental ailments were a branch of general medicine. At the Cassel Hospital, at Penshurst, Kent, there was always a waiting-list of 40 to 50 non-certified cases. These cases, on admission, paid 5 guineas per week, an inclusive fee, and there were two wards at 3 guineas. The cases were followed up, and a return made to show what had happened to them.

Following a discussion on the mental condition of a man who was insane only at certain periods, the Chairman said he felt that the doctor should not be subject to be influenced by the idea that he might get into trouble for what he did; he should be able to approach a case without fear or favour, and he should be protected, always assuming that he acted in good faith. In the course of answers to further questions, the witness said that to neglect to make provision for the early treatment of mental disorder was equivalent to telling a patient who came feeling ill that the illness could not be treated until there were cavities in the lung and hæmoptysis occurred, but after that he would be treated and looked after for the rest of his life. He also had a great objection to early mental cases being placed with confirmed cases, which constituted for them a tragic outlook. He favoured the general hospital being a clearing-house, where new cases could be investigated and passed on.

Sir Humphry Rolleston suggested that if notification were substituted for certification it might only be a matter of time before the former was viewed, in the popular mind, in the same way as certification now was.

Mr. Jowitt put to Sir Maurice Craig the disadvantage to fresh patients of being placed in noisy surroundings, and the reply was that the witness was very much in favour of more single rooms ; he had often wondered how patients were expected to sleep in a dormitory. He believed such noise and lack of sleep might drive a patient over the borderline.

Sir Humphry Rolleston reverted to the question of the reluctance of the profession to certify, and asked the witness whether he thought it well that there should be a specialised class of medical officer to deal with this subject, allocated to districts, as in the case of tuberculosis and venereal disease officers. Sir Maurice Craig replied in the affirmative, adding that such officer should not himself be in practice. In further replies he said he did not think any private mental home would object to revealing its balance-sheet to the Board of Control ; he did not see any need to make such statement public.

The Student's Curriculum.—Questioned as to the inclusion of the study of insanity in the curriculum, witness said the desire was to get this subject recognised along the same lines as clinical medicine, though he well knew how burdened the curriculum was already. It was essential, he thought, that every medical student, on entering practice, should know something about the mind and its working, and he would accord more prominence to that, even if it were necessary to curtail something else. At Guy's Hospital Medical School courses on mental neuroses would be given, and it was hoped to proceed to a systematic study of the mind. Personally, he would have both an extended scope and some knowledge of psychiatry possessed by every qualified student.

Evidence of Dr. F. L. Golla.

Dr. Frederick Lucien Golla, pathological director of the Laboratory of the London County Council, was the next witness. He considered it desirable that facilities should be afforded for pathological research, not only in individual mental institutions, but also at central institutions, throughout the country, the latter offering assistance and advice to the smaller laboratories, and undertaking training of asylum medical staffs.

Research Facilities at the Maudsley Hospital.—That was the scheme under which London worked. He himself did his work at the Maudsley Hospital, where he had in coöperation three skilled assistants, engaged whole time. Four assistant medical officers from mental hospitals acted for a period of three months at the laboratory as a training, and the choice was determined by the medical superintendents or the assistant officer's own application. This procession of four assistants went on throughout the year. All the Wassermann and other tests for the London County institutions were done at his central laboratory. Dr. Golla said he also engaged in research initiated by himself, and supervised that done at the other asylum laboratories in the County, and suggested subjects for study at those laboratories. There was, at the Maudsley Hospital, a department for physiological psychology, for investigating the physiological concomitants of mental disturbance ; they investigated the changes in metabolism occurring in association with various mental states, the reactions in those states, and, in another department, questions of more or less pure psychology were dealt with, and a record was kept of the family histories of all the cases and their coördinate relationships. All that work he regarded as of the greatest importance. He thought the ordinary medical officer should be encouraged to investigate cases; it would assist diagnosis and in the suggestion of remedies. An enormous field was opened by this work ; we were definitely behind several other countries in this matter. He said that in psychology there was no such clearly cut classification of disease as in physical medicine, hence there must be means of investigating the patient himself, and the London County Council had recently effected great progress in providing these facilities. In the provinces four or five counties could be grouped for coördination with one central institution. Outside London, with the exception of Birmingham, Cardiff, and one or two other centres, there was not much research being done in mental disease. He thought medical officers should be granted adequate leave from their duties so that they might continue their studies, and time spent in research should be regarded as part of the duties of the asylum medical officer. He favoured the idea of local authorities making grants-in-aid to such institutions in the provinces. The malarial treatment of general paralysis of the insane was a good instance of a definite advance due to a modern discovery ; again, true asylum dysentery, at one time very prevalent, was now practically unknown, an enormous economy in the matter of money and life.

Evidence from the Central Association for Mental Welfare.

Dr. A. F. Tredgold, Miss Evelyn Fox, and Miss F. Andrew attended to give evidence on behalf of this body, mainly concerning adolescent mental disorder, which was, they affirmed, widely prevalent and was a menace to the general state of society. These cases were not incipient, and no existing administrative provision covered them, yet they needed supervision, training, and treatment of a kind not possible in the home. The establishment of training homes for these cases was urged, where skilled treatment would be available. It was suggested that admission to such establishments, if set up, should be on the application of a parent or guardian, or in the alternative, of a local authority backed by a medical certificate that the case was a suitable one.

Mr. Jowitt questioned whether this matter was not outside the terms of reference, and following upon this an argument took place as to whether these cases really came within either the Mental Deficiency Acts or the Lunacy Acts. The Chairman thought the category was so indefinite that charity might meet the need.

Sir Humphry Rolleston asked Dr. Tredgold as to the degree of prevalence of mental disorder accompanied by misconduct, and the witness replied that the number of cases of mental disorder which had recently been met with as a sequel to encephalitis, chiefly lethargic, rendered the problem more acute. Sir Humphry Rolleston said he thought it possible a case could be made out for an amended Mental Deficiency Act.

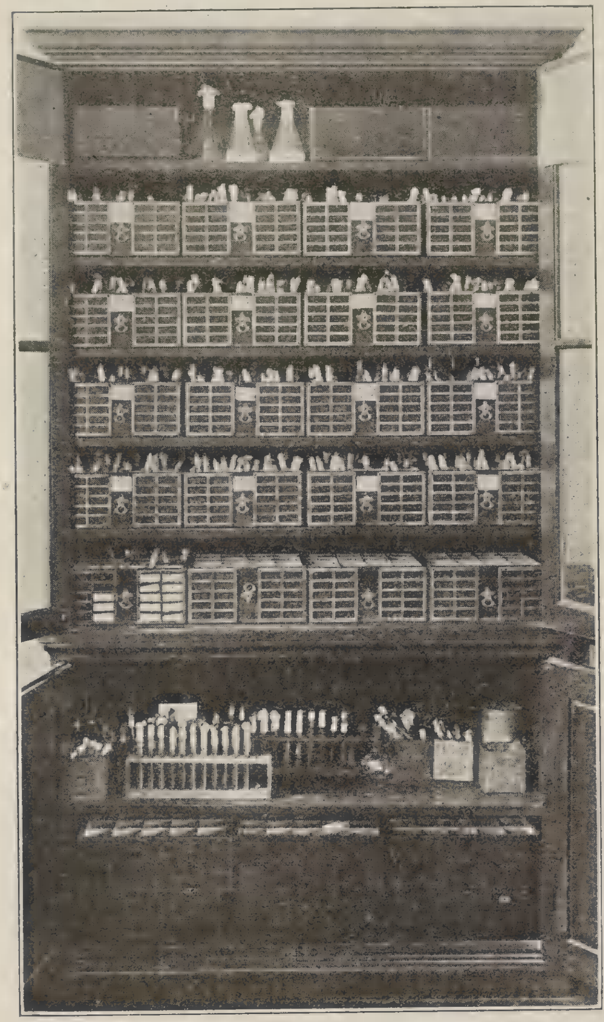
Another submission tendered by the witnesses was that there should be an adequate investigation, from the mental standpoint, of all persons criminally charged in whom there was reason to suspect mental defect.

The Commission then sat privately, and adjourned to a day to be notified.

PHILADELPHIA: ALVARENGA PRIZE.—The College of Physicians of Philadelphia announces that the next award of the Alvarenga Prize, being the income for one year of the bequest of the late Señor Alvarenga, and amounting to about $300, will be made on July 14th, 1926, provided that an essay deemed by the Committee of Award to be worthy of the prize shall have been offered. Essays intended for competition may be upon any subject in medicine, but cannot have been published. The essay should represent an addition to the knowledge and understanding of the subject based either upon original or literary research. Essays must be received on or before May 1st, 1926, by the secretary of the College, 19, South 22d-street, Philadelphia, Pa., U.S.A., from whom all further information may be obtained. The Alvarenga Prize for 1925 was awarded to Dr. Raphael Isaacs, of Boston, Mass., for his essay on the Nature of the Action of Roentgen Rays on Living Tissue.

THE NATIONAL COLLECTION OF TYPE CULTURES.

It was in 1920 that the Medical Research Council made arrangements to maintain at the Lister Institute this admirable collection of type cultures. In the past the demands of biologists and bacteriologists for an available supply of authentic strains of bacteria and protozoa had never been fully met, and the need for such a supply was particularly felt in medical research work, both for the study of principles and methods in bacteriological investigations and for systematic classification of species and strains. The Lister Institute had assisted bacteriologists at home and abroad as far as its private resources permitted and there was a certain amount of international coöperation, but conditions were far from satisfactory. The National Collection has filled the gaps. At first attention was concentrated on obtaining fully authenticated strains of pathogenic organisms, but as opportunity has offered additions have been made of those of economic importance. In 1921 it became apparent that mycologists were in need of a collection on similar lines, and by coöperation this was added at the Lister Institute. Though the mycological section is at present limited to a few hundred strains it is hoped to collect and maintain cultures of all fungi of importance in plant pathology, medicine, veterinary science, technology, and soil biology, besides specially rare or interesting species.



A cabinet in the collection of type cultures at the Lister Institute.

To keep up so large an establishment is a task of some magnitude and gives ample opportunity for research on economical and labour-saving methods of subculture. The work is so apportioned that a certain number of organisms come up for subculture every day and a diary is kept in which the dates are entered up many months in advance. There is, therefore, no fear of any organism or group of organisms being inadvertently overlooked. Some require frequent subculturing, such as gonococci, *M. catarrhalis*, *B. bulgaricus* and *acidophilus*, and anaerobic actinomyces. Others are extremely hardy, for example, *B. anthracis*, most of the anaerobes, *B. coli*, and other coliforms, *B. typhosus*, yeasts and various moulds (penicillium and aspergillus). Many of these could be safely left for a year, but in practice no organism is left more than six months without subculturing. In between these extremes there are many which are subcultured at monthly and two-monthly periods. Some species of pathogenic organisms (e.g., *B. anthracis*, *B. avisepticus*) appear to maintain their virulence for many years in artificial cultivation. Others become rapidly attenuated. At the Institute a few types (streptococci, *B. pestis*, *B. enteritidis* Gaertner, *B. tuberculosis*) are kept virulent for animals and an endeavour is always made to exalt pathogenicity on special request. Cultures of *B. tuberculosis* lose their virulence on long cultivation in the laboratory; freshly isolated strains of the bovine variety, for example, lose their virulence in about three years.

But, apart from research, such a collection requires and deserves to be used as much as possible by practising bacteriologists. The new edition of the catalogue is intended to stimulate microbiologists in this and other countries to avail themselves further of the resources of the collection and also to deposit important strains for maintenance and reference. Every effort is made to meet the needs of applicants for cultures, and help is given in identifying strains submitted for the purpose. Although the Director can only accept cultures for the collection at discretion, it is hoped that this will not deter workers from forwarding strains of even the commonest types of organism. These are useful in maintaining an adequate representation of strains of recent origin, and studies in classification are aided if large series of authentic specimens of closely related species are made available.

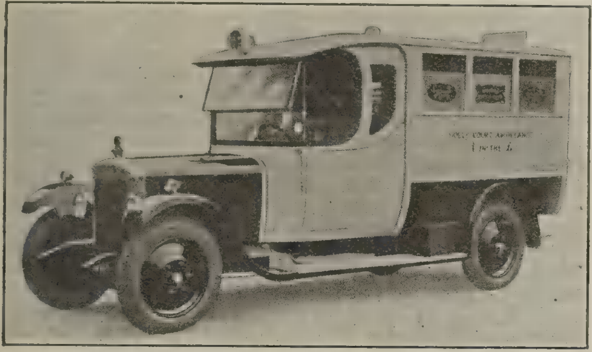
Communications on the subject may be addressed to the Curator, National Collection of Type Cultures, Lister Institute, Chelsea, London, S.W. 1.

AMBULANCES AT OLYMPIA.

Although the cars shown at the Commercial Motor Exhibition, held at the end of last month, were very varied, and included vehicles for almost every purpose, it was disappointing to find only six ambulances. The ambulance is one of the most highly specialised forms of motor vehicle there is; it must be fast and very comfortable, and perfectly fitted, lit and warmed, and must also be designed so that it can be readily cleaned and disinfected. Ambulances, therefore, fall into two classes. The first is designed by motor manufacturers to fit their own commercial chassis, like the Bean, the Berliet, and the Austin; the second is designed by ambulance builders to fit the largest and most luxurious private-car chassis, and of these hardly a representative was to be seen. Their advertisements are familiar to readers of medical journals, but for some reason they did not exhibit. The Pickford ambulance, on a 25/85 Daimler chassis, was the only true example, and the Talbot 25/50 was an instance of a first-class ambulance made by a motor-car firm. These are the cream-white vehicles with the musical gong that are so familiar in the London streets. The car-makers' ambulances are by no means to be despised, as, although they are not as luxurious and fastidiously equipped as the work of ambulance specialists, they are yet extremely efficient, and as motor vehicles are absolutely reliable.

The Bean ambulance is designed to provide essential equipment at the lowest possible price; "extras" of every kind are listed so that the purchaser can choose just what he wants. The chassis is the 20–25 cwt. Commercial, with four speeds, and 5 in. straight-sided pneumatic tyres, and for £500 is fitted with two stretchers and a hinged seat. Heaters, wash basins, starter, headlamps, &c., are extras. The ventilation system is excellent, and the body is easily disinfected. The finish is "self" coloured—i.e., varnished wood panels—and the springing is very good. All possible extras, including four wheel brakes and wash-basin, total £90.

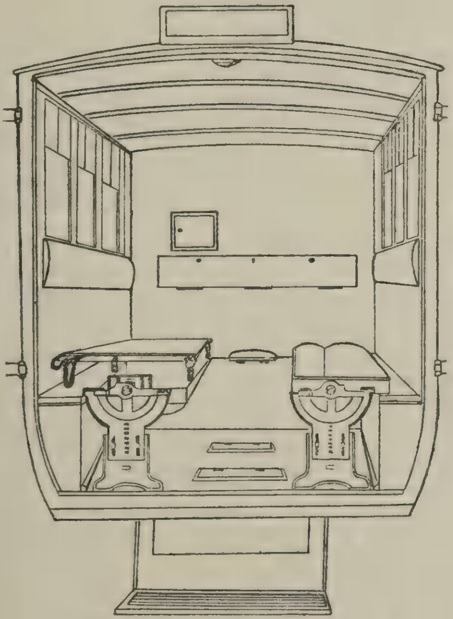
FIG. 1.



The J.H.C. type ambulance, fitted on a 25 h.p. Daimler chassis.

Automobiles Berliet fit ambulance bodies to all of their 15, 20 and 30 cwt. chassis. The model at Olympia was the 20 cwt. 15·9 h.p., slightly larger than the Bean, and also varnished inside and out in self-colour. There is room for two stretchers, of which the bottom one is fitted with 12 in. rubber-tyred wheels, so that a patient can be wheeled any distance. If the ambulance is intended for infectious cases the body is specially prepared with all corners neatly blocked and rounded off, and the stretchers are fitted with Dominion wire mesh, which can easily be disinfected. Four gears are fitted, and the price is £525. The body of this machine is made by Wilson and Stockall, of Bury.

FIG. 2.

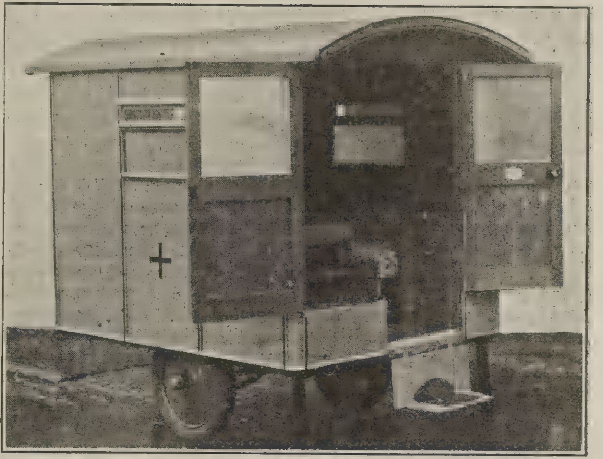


Interior of J.H.C. ambulance.

The Austin ambulance is fitted to the well-known Austin 20 chassis, with a lowered gear ratio. It is a handsome vehicle, finished in dark green, with two large frosted-glass windows on each side. The top stretcher lowers with the reliable and popular parallel-ruler and worm-wheel device. The back doors expose the whole interior when open, and shut with a slam lock; there is a further safety lock to prevent theft. A sliding door can be fitted in front beside the driver if required, to facilitate the entry of sitting cases. The interior is enamelled white, with linoleum or rubber tiling on the floor, and is very fully equipped. The price is £725 at the works.

The Talbot 25/50 hospital ambulance is a splendid vehicle. The stretcher-frames are made of non-staining steel alloy, and run on rubber-tyred wheels; the stretchers can be replaced by upholstered seats with padded back-rests. The car will take two stretcher cases, one stretcher case and four sitting cases, or eight sitting cases. Two folding seats are fitted for attendants. The interior of the roof and walls is smooth-surfaced and has rounded corners, and the lower portion of the sides and floor are sheathed in aluminium. Heating pipes fed from the exhaust run under both seats. Full medical equipment is fitted, and two roof lights, roof ventilation, an electric fan, and an inspection lamp. The price is £850. The Accident type, at £785, is identical with the Hospital model, except that it is less lavishly fitted and has no heater nor fan.

FIG. 3.



Ambulance trailer.
By Eccles Motor Caravans.

The ingenious "penny-in-the-pound" scheme adopted by the Sheffield Joint Hospitals Council has not only maintained the hospitals of Sheffield on an adequate footing, but has made them almost prosperous. A part of the Council's activities is the provision and maintenance of a fleet of ambulances, and they have chosen one of the most luxurious and beautifully equipped machines obtainable. The makers are E. H. Pickford and Co., Ltd., of Sheffield, who designed a type of body known as the J. H. C. (Fig. 1), especially to suit the requirements of the Council. The chassis is the 25/85 h.p. 6-cylinder Daimler, and the cost of the ambulance, complete, is £1130, or £1030 on the 20/70 chassis. Four wheel brakes are fitted. The stretcher equipment (Fig. 2) is beautifully designed. Four stretcher cases can be carried, and the two top racks lower instantaneously with a special extension device which projects them clear of the back of the ambulance so that cases can be easily laid on them and swung into place, and the whole stretcher equipment can be quickly folded up to make room for ten sitting cases. Splints, utensils, and a medicine chest are included in the equipment, the whole of which can be easily taken out to cleanse and disinfect the interior. The finish is left to the customer's choice, but the model shown was in black and white. It is certainly one of the finest ambulances on the road.

Few hospitals or municipalities can afford ambulances as expensive as this, however, and many cottage hospitals and nursing homes find even the cheaper models outside their reach. For these there is a really admirable little vehicle made by Eccles Motor Caravans (Fig. 3), a trailer which, although it is only 7 ft. 3 in. by 5 ft. 6 in. by 5 ft. 9 in., will take two stretcher cases in comfort, and possesses the completest outfit down to hot-water bottles and blankets. It can be trailed at a very fair speed behind any 10 h.p. car, and costs only £135. It has automatic brakes of its own, and is beautifully finished inside and out. The "Eccles" sounds such a godsend to the small hospital that it will be surprising if it does not become extremely popular.

BERLIN.

(From our own Correspondent.)

Closed Pharmacies.

Your Paris correspondent lately complained of the drawbacks of the closure of Paris pharmacies. Things are arranged otherwise in Berlin. Until the war the pharmacies were compelled to be open day and night, Sundays and holidays included. There was always a chemist on night duty in each pharmacy who received the prescriptions through a hole in the shutters, whilst the individual fetching the medicine had to remain outside in the street. During the war, when the great majority of chemists and their assistants had joined the army, the Government, under the powers conferred upon them, ordered that of four pharmacies only one had to be open on Sundays, holidays, and at night. The other pharmacies, even when they wished to keep their shops open, were not entitled to do so. This system was maintained after the war, although there was no longer a shortage of qualified assistants to do night duty. A licensed chemist in Hanover, who tried to keep his shop open day and night, was prevented by the local police under the regulations issued during the war. He therefore brought an action against the police, pleading that the regulations had been contrary to the apothecaries law, and that they had expired with the lapsing of the Emergency Act. The High Court indeed gave a judgment that this was really the case, and that the chemist had the right of having his shop open day and night. The German Association of Licensed Chemists and the Union of Assistants, who had been very much satisfied with the state of things during the war, thereupon decided to maintain it by agreement amongst themselves. The system certainly works very satisfactorily from the point of view of the public. To save the public unnecessary trouble there is on every closed pharmacy a poster indicating the nearest pharmacies open, on a system of weekly rotation. Moreover, every medical man residing in Berlin receives in the beginning of the year from the Chemists' Association a calendar with a complete list of the pharmacies which are open by rotation at night or on Sundays. In this way there is no need for a sick person to do his pharmaceutical shopping early. It never occurs that a pharmacy described as open is actually closed, as stated by your Paris correspondent. It must, however, be considered that the licensed chemists in this country are under strict Government control, and are regularly visited by the district medical officer of health, together with a Government chemist. Contrary to the law in France, there is a "numerus clausus" for licences. A chemist after having duly qualified is not entitled to open a shop at once, but he must wait until a licence becomes vacant by the death of a licensed chemist or until the Government grants a new licence when there is a need for the increase of pharmacies. It is not legal to sell or to buy a licence; a licence may, moreover, be withdrawn by a law court in cases of grave misdemeanour. In Berlin, which has about 4 million inhabitants, there are only 380 licensed pharmacies. This number would be inadequate were there not an unlimited number of druggists, who, however, are not allowed to make up prescriptions or to sell poisonous drugs.

Medical Lectures for Working People.

Laymen frequently complain of medicine being a science which has but little connexion with the nation. This view is, however, erroneous, as shown by the fact that eminent medical men have accepted an invitation of the trade unions of the great industrial city of Essen to deliver lectures to their members. Among the lecturers are Prof. Sauerbruch, of Munich, on the surgical treatment of tuberculosis; Prof. Rubner, of Berlin, on fatigue; Prof. Thomas, of Leipzig, on the self-government of the human body; Prof. Krehl, of Heidelberg, on the prophylaxis of infectious diseases; Prof. Aschoff, of Freiburg, on the value of autopsies and of experiments on animals for the public health; and Prof. His, of Berlin, on the circulation of the blood and its derangements. The first lecture, delivered by Prof. Bier, of Berlin, on the importance of physical exercises for the prevention of tuberculosis, was very well attended. The scheme of the lectures is a good one, and will certainly contribute to inform the working people of the value of medical researches for their health. The series was opened by an introductory speech from the Chancellor, Dr. Luther, formerly mayor of Essen.

The Institute for Tropical Diseases.

The Institute for Tropical Diseases and Tropical Hygiene in Hamburg recently celebrated its twenty-fifth anniversary, representatives of the Government, the city of Hamburg, and of the medical profession being present. The foundation of the Institute was suggested by the late Prof. Koch, and it was first planned that its seat should be at Berlin, and that it should be attached to Prof. Koch's Institute for Experimental Medicine. It was, however, decided that Hamburg was preferable, because in that great port where seamen from every part of the world meet there is a greater opportunity for the study of tropical diseases and the treatment of patients. The first home of the Institute proving too small, new premises were built and opened in 1914. The premises consist of several buildings. In the main building there is the office of the medical officer of the port of Hamburg, to whom tropical diseases are notified by ships entering the port and who can therefore at once direct patients to the Institute. There is a museum of tropical hygiene, a laboratory to accommodate 50 students, and a library of 20,000 volumes, being the most complete on that subject in Germany. An animal station is connected with the laboratory, where the animals are observed after experiments performed on them. The hospital attached to the Institute has 70 beds, intended for seamen of every nation, and for Germans who have resided in tropical climates. Hitherto about 1000 medical men have worked in the Institute, and about 600 scientific publications have been issued under its auspices. It is a matter of congratulation to the city of Hamburg, which finances the Institute, that the work has been maintained even during the hard times of the inflation. In connexion with the jubilee the Society for Tropical Medicine held a meeting, Prof. Nocht, of Hamburg, being in the chair. Prof. Plehn, of Berlin, formerly of East Africa, read a paper on the development of blackwater fever. Prof. Fülleborn, of Hamburg, gave a report on researches into ascaris infection, and described the complicated mode of entry of the larvæ into the host through the intestines and the lung to the stomach, where the larvæ develop as worms. Dr. Winkel, of Java, Dutch East Indies, gave a report of the salvarsan treatment of frambœsia. By a few injections the disease is, as a rule, cured. Prof. Ziemann reported on a disease known in the tropics as gangosa, somewhat resembling frambœsia. Dr. Hoppenhauer, of Tübingen, praised the results obtained by the treatment of dysentry by yatren, which he described as the best remedy in acute and chronic cases. Excellent results have been reported from the Congo, from the British and the Dutch East Indies, from Japan, and from South America by many authors, who all agree with the extremely good action of the compound. Dr. Werner, of Berlin, spoke on the five-days' fever (febris quintana), a disease which had been observed during the war in the Balkans. Among other papers read before the congress was one by Prof. Thiel, of Leyden, on anopheles; one by Prof. Mühlens on his travels through South America for the study of malaria; and one by Prof. Zschukke on the diseases in Central America. The meeting was attended by 200 medical men who had had experience in tropical diseases.

Public Health Services.

REPORTS OF MEDICAL OFFICERS OF HEALTH.

THE following health statistics for Liverpool and Leeds show a great similarity. Liverpool has a higher birth-rate, while Leeds shows higher cancer and childbirth mortality. In Liverpool the childbirth death-rate is generally low, perhaps owing to the excellent lead that has been given for many years by the Ladies' Charity.

Name of city.	Estimated mid-year population (R.-G.).	Birth-rate.	Death-rates per 1000 of the population.				Death-rates per 1000 births.		
			All causes.	Tuberculosis.	Cancer.	Resp. diseases with influenza.	Neonatal mortality.	Infant mortality.	Maternal mort. from childbirth.
Liverpool ..	836,396	24·6	13·6	1·52	1·12	3·7	35	103	3·0
Leeds	471,600	18·1	14·3	1·40	1·35	3·8	39	108	3·8

Liverpool.

Dr. A. A. Mussen, the present medical officer of health, and Dr. E. W. Hope, his predecessor, produce a joint report. Only one case of small-pox occurred during the year, and about 75 per cent. of the child population are successfully vaccinated. The results of an inquiry suggested that a considerable amount of vaccination of unvaccinated children is also done within the school period. Six cases of anthrax were reported during the year. Two of the patients handled wool, three handled hides, and one looked after a machine for crushing bone. Up to 1924 nearly all the cases of enteric fever in Liverpool have been caused by *B. typhosus*, but in that year there were 24 cases caused by *B. paratyphosus*, besides 36 caused by *B. typhosus*. Most of the paratyphoid cases occurred in April and May and they had an unusual sex and age distribution. Females and persons under 15 were chiefly affected, and as none of the usual food sources of typhoid fever could be traced, it is deduced that the agent responsible is widely used but not heavily infected, and is more indulged in by children than adults.

There were 230 notifications of encephalitis lethargica compared with 111 in the previous year. The diagnosis was revised in 33 cases after admission to hospital in favour of tuberculous meningitis (eight cases), enteric fever (three cases), pneumonia (four cases), or other conditions, but there remained 189 cases with a case fatality of 10·6. The case fatality in 1923 was 32·4, and it is suggested that the decrease is partly due to mild cases being recognised. Up to the autumn of 1922 lethargic symptoms were predominant, during 1923 cerebral irritation became a more prominent symptom, and in 1924 there was a tendency to revert to the lethargic type. Prior to 1923 the disease occurred in groups with no direct association of cases, during 1923 it was widespread in the city and neighbourhood, in 1924 the area chiefly affected was a broad band of city and suburbs. Half of the 1924 cases were under the age of 20. Before this age sequelæ are commoner, whilst the mortality increases with advancing age. The Liverpool experience is exceptional in that the infectious nature of the disease is clearly demonstrated. In about 18 per cent. of the 1924 cases, and in 9 per cent. of the 1923 cases, a possible connexion with a preceding case was made out. The incubation period is usually from a week to a fortnight. A diagram shows that encephalitis and influenza are not as a rule prevalent together; but in 1924 epidemics of the two diseases occurred simultaneously. Inquiries about the condition of 94 survivors under 16 years of age showed that 37 had made a complete recovery or were but slightly affected. Of the remaining 57, 37 were attending elementary schools, 9 were absent from school, 3 had left school, 4 were in reformatory schools for delinquency, 2 in special schools, and 2 in asylums. Among the 57 the most frequent condition was alteration of the sleep rhythm, which was usually associated with a want of self-control and in extreme cases with moral imbecility. The admission of these children to asylums is not recommended, for recovery may still be possible; and it is suggested that an attempt should first be made to educate them in special classes, and that, if this fails, a residential institution may have to be considered. In view of the definite infectivity of the disease, school-children from infected houses are excluded from school for a period of three weeks.

A chart shows the death-rate in Liverpool per 100,000 from diabetes for each quinquennium since 1890. During 1890–94 the rate was 3·8, and during the next three quinquennia it was 5·3, 6·5, and 8·4. During 1910 to 1914 it was again 8·4; in the war quinquennium it fell to 7·4, and during 1920–24 it rose to 8·6. During the first six quinquennia about 120 males died, compared with 100 females, but in the last quinquennium only 75 males died, as against 100 females, and it seems conceivable that this alteration is due to insulin having a more marked effect in males. A satisfactory scheme is now in operation for dealing with all classes of blind persons, and the city council has passed a resolution recommending all corporation committees to give special consideration to the workshops of the blind when making contracts for articles such as brushes and mats. The Carnegie Welfare Institute is proving a most valuable addition to the maternity and child welfare scheme, and the present report contains photographs and a plan of this new building. Out of 20,599 births, 13,270 were attended by practising midwives and 1501 by the midwives of the staff of the Ladies' Charity; 398 still-born babies were examined by the city bacteriologist, of which 26 (6½ per cent.) were reported as probably syphilitic. There were 690 notifications of ophthalmia neonatorum during the year with three cases of damaged sight among the survivors. X ray examination has been much used for the diagnosis of tuberculosis, and the satisfactory results are shown by the facts that whilst out of 1806 admissions to sanatoria, only nine patients were subsequently considered to be non-tuberculous; cases diagnosed as negative seldom return to see the tuberculosis officer. The Seamen's Dispensary was opened in January, 1924. Though it is intended primarily to deal with venereal disease, seamen will be able to obtain advice there for other ailments, including tropical diseases, before being referred to other institutions. The number of new cases of venereal disease dealt with at the dispensary during 1924 was 428. A few years ago the Welsh sheep farmers suffered serious loss from the condemnation of their mutton at the Liverpool abattoir owing to the effects of liver fluke. The efforts of the Board of Agriculture to eradicate the disease in North Wales by spraying the pastures and brooks with chemical substances intended to destroy the water snail, which is the intermediate host of the liver fluke, have apparently been successful. The Welsh sheep now show remarkable freedom, though the Irish and Scotch sheep are severely infected. Of 3740 cows in the city cowsheds in 1924, 26 were found with tuberculosis of the udder. The bacteriological report on the examination of milk samples taken from bulk does not indicate that tubercle of the udder is getting less but rather that it is on the increase. Of samples of country milk examined during the eight years 1913–20, 6·4 per cent. were tuberculous, while for the four years 1921–24 the figure was 10·1. During 1924, 57 out of 549 " bulk " samples of country milk and 22 out of 232 " bulk " samples of city milk proved tuberculous (10·4 and 9·5 per cent. respectively).

Housing is still a serious problem in Liverpool, and the houses provided since the war have neither overtaken arrears nor met the needs of the growing population. An estimate is put forward that Liverpool is worse off now than it was at the end of 1914 by rather more than 10,000 houses.

Leeds.

Dr. J. Johnstone Jervis records the prevalence of influenza of a peculiarly malignant form at the beginning of the year. The deaths registered numbered 404, and the death-rate for the year (0·86) was the highest since the influenza years of 1918–19. During the epidemic the infant mortality-rate went up with a bound, and in the third week of February reached the phenomenally high figure of 321. The general death-rate rose to 38·4 in the first week of March and was 35·9 and 26·1 in the two subsequent weeks. Normal figures were reached about April. A good many cases ended fatally within 48 hours of the first symptoms. Some cases were removed to hospital, but as a rule too late to be of any use, and Dr. Jervis has not much faith in hospital removal for influenza complicated with pneumonia. He refers to the inadequate hospital accommodation provided for the city for non-infectious diseases. All the voluntary institutions have long lists of patients awaiting admission, whilst the Poor-law infirmaries are partially empty. The way out of the difficulty, says Dr. Jervis, is obviously to open the doors of the Poor-law infirmaries to the whole community. Atmospheric impurity in Leeds is getting less. The percentage of factory chimneys emitting dense smoke for more than three minutes during an hour's observation is also decreasing. Thus, the percentage from 1920–24 has been 12·4, 8·6, 7·1, 3·3, and 1·7. During these five years over 25,000 observations of one hour each have been made. Among 2063 cows in the city 13 cases of tuberculosis were found, in 5 of which the udder was affected, whilst the remaining 8 had generalised tuberculosis. There has been little advance in cleanliness of methods.

There were only seven (mild) cases of small-pox notified with no deaths, and Leeds also showed less increase in encephalitis lethargica than many other towns. The cancer death-rate was the highest ever recorded. The health committee have set up a special committee to inquire into the local incidence of the disease. Considerable progress has been made in the reorganisation of the tuberculosis scheme. A whole-time clinical tuberculosis officer has been appointed, and a sanatorium school for children with signs of early disease of a non-infective type has been opened at the Hollies, Weetwood. The provision of sanatorium accommodation for women and children is a matter of extreme urgency. Dr. Jervis is also of opinion that no tuberculosis scheme can be considered complete which does not find suitable remunerative employment under favourable conditions for the men and women who undergo sanatorium treatment. 993 new cases attended the 14 antenatal centres, and there were 8558 births. About 20 per cent. of the total births took place in institutions or nursing homes. The corporation have made arrangements for the provision of maternity beds at the three Poor-law union infirmaries. This scheme came into operation on April 1st and was not much used during the year. It is, however, expected that when the excellence of the accommodation becomes known the facilities will be utilised to the full. A special block at the city hospital has been opened for cases of puerperal sepsis. Cases of septic abortion and abscess of the breast will also be admitted.

The health committee have spent considerable sums during the year in providing convalescent home treatment for mothers and babies. The housing problem is as pressing as ever. Dr. Jervis points out that about two-thirds of all the deaths occur in back-to-back houses. He is unable, however, to give separate figures for the ancient and modern back-to-back houses. The modern ones, he says, are little different from " through " houses in healthiness, and this statement appears to be borne out by the figures of deaths, seeing that 77,790 of the 115,289 houses in Leeds, or very nearly two-thirds, are of the back-to-back type.

MENTAL HOSPITAL REPORTS.

Dorset finds that its mental patients are steadily increasing in number, especially the women, but *Dorset Mental Hospital* has still some of its 950 beds vacant. The recovery-rate for the year was 43 per cent. and the death-rate 7·44 per cent., a figure which, the superintendent complains, in common with so many of his colleagues, might be lower if the infirmaries were prepared to relieve the asylums of their unnecessary burden of senile cases. There was an epidemic of scarlet fever, introduced by a nurse, and over 100 persons were affected by a mild influenza epidemic in the spring. A visiting surgeon has recently been appointed and his services will be much appreciated. The dental surgeon has seen 193 patients during the year. Recent structural improvements include an automatic telephone system, a steam disinfector, and the installation of four special baths for continuous treatment. The hospital now has 70 additional acres of farm land which will be extremely helpful to the patients and organisation staff. Dorset county was one of the first to develop the important out-patient aspect of the mental work. The clinic at the Dorset County Hospital continues to flourish. The number of new cases is increasing and many patients discharged from the hospital report from time to time for advice or treatment. This is clearly a most valuable function of the clinic. The commonest type of out-patient is the anxiety neurosis. Parole is granted to 33 patients outside the hospital grounds and to 81 on the estate, and there are open-door wards and a club ward. The laboratory has been busy with routine examinations and three typhoid carriers have been detected, with the result that there has only been one case of typhoid in the hospital, whereas it used to be endemic. Investigation has been made into the urea-content of the blood in epilepsy.

Wilts County Mental Hospital has over 1000 patients under care. The recovery-rate was 27·7 per cent. and the death-rate 7·1 per cent. 44·4 per cent. of those who recovered were admitted in their first attack within three months of its onset. Almost all those discharged had a probationary period on trial and several of these were helped with a money grant. The general health during the year was good, but there were 12 cases of dysentery and two of typhoid fever, which has not yet been traced to its source. A cinematograph apparatus has been installed. The patients are encouraged to wear their own clothes, though at present only a small proportion are doing so. At present there is no laboratory.

Derby Borough Mental Hospital has had a recovery-rate of 10·7 per cent. for men and 53·3 per cent. for women, among its 400 patients. The death-rate was

8·6 per cent. and post-mortem examinations were held on all but one of the fatal cases. The general health of the patients has been good except for an epidemic of influenza. The recommendations of the "dietary" report of the Board of Control have been adopted to a large extent. Of the nursing staff, 63 per cent. on the male side and 24 per cent. on the female side hold the certificate of the M.P.A., a much higher figure than that for the country generally. Parole is allowed to a number of patients, and money allowances were granted to a few of those sent out on trial. There is at present no visiting specialist staff, not even a dentist. The borough has 42 certified mental defectives in its charge and, like so many other places, has continued difficulty in finding accommodation for urgent cases.

Roxburgh District Board of Control has published an annual report to May last. It maintains 350 patients in the asylum at Melrose. The female admissions are usually greater than the male, but this year they have been more than double. The recovery-rate was 31·3 per cent. and the death-rate 7·2 per cent. Influenzal attacks and a few cases of diphtheria were the only infectious diseases. The source of the diphtheria could not be traced. For two years in succession there have been no failures among the nurses sitting for the final examination of the M.P.A. The number of voluntary boarders shows a satisfactory increase.

INFECTIOUS DISEASE IN ENGLAND AND WALES DURING THE WEEK ENDED Nov. 7TH, 1925.

Notifications.—The following cases of infectious disease were notified during the week:—Small-pox, 56 (compared with 98 last week); scarlet fever, 2537; diphtheria, 1105; enteric fever, 69; pneumonia, 1016; puerperal fever, 51; cerebro-spinal fever, 11; acute poliomyelitis, 9; encephalitis lethargica, 40; dysentery, 8; ophthalmia neonatorum, 117. There were no cases of cholera, plague, or typhus notified during the week.

Deaths.—In the aggregate of great towns, including London, there were 3 deaths from enteric fever, 31 from measles, 14 from scarlet fever, 11 from whooping-cough, 31 from diphtheria, and 59 from influenza. In London itself there were 9 deaths from diphtheria and 26 deaths of infants under 2 years of age from diarrhœa and enteritis.

MEDICINE AND THE LAW.

Paraldehyde as a Dangerous Drug.—Mistaken Identity.

RECENTLY an inquest was held at Hammersmith upon the body of a man whose death was attributed by medical evidence to pneumonia accelerated by the use of paraldehyde. The deceased, it seems, had been addicted to cocaine until he had become the object of police-court proceedings under the Dangerous Drugs Acts; he had then turned to paraldehyde which, as a medical witness observed, can at present be bought without difficulty and should be placed under severe restrictions. The coroner, who recorded a verdict of death from misadventure, confirmed this opinion and remarked that the evidence showed that restrictions should be placed upon the sale of all drugs of a hypnotic nature.

There was one remarkable feature of the case. The dead man, it seems, used the name Geoffrey Wentworth Malim. The Medical Directory contains an entry of a doctor of that name. It thus happened that, when the inquest was opened, it was assumed that the body was that of Dr. Malim, and more than one newspaper report appeared under the headline "Doctor as Drug Victim." The inquest was adjourned. When it was resumed the West London coroner announced that it had now become known that the dead man's proper name was Samuel Neville Appleton. The real Dr. Malim had written to say that Appleton had used his name frequently, and had caused him much trouble by running up bills in that name.

The incident has two important aspects. There is the aspect personal to Dr. Malim, who is entitled to the amplest amends which publicity can make for the injury done to him by the dead man—an injury for which the law affords little remedy. Scotland Yard, it appears, had been notified by Dr. Malim four months earlier that this imposture was being carried on. It is unfortunate that the police authorities, through whom (in part, at any rate) the identity of Appleton was established at the inquest, should not have found themselves able to take action at the time. The other aspect of the case is general. The proceedings were reported, as already stated, under headlines which inevitably suggested that a member of the medical profession had abused the facilities which have been, and must be, entrusted to medical practitioners in respect of dangerous drugs. Three years ago the Home Office inserted in the Dangerous Drugs Regulations the sentence "the prescription shall not be given for the use of the prescriber himself." Considerable feeling having been aroused in the profession, the offending sentence was formally rescinded six months afterwards. Lest there should still be a tendency to distrust doctors in such matters, it is the more essential to emphasise the fact that the recent case was not that of a "Doctor as Drug Victim."

The Services.

ROYAL NAVAL MEDICAL SERVICE.

THE following appointments have been notified:—Surg. Comdrs.: C. G. Sprague to the *Emerald;* R. Kennedy to the *Ark Royal;* H. D. Drennan to the *Yarmouth* (on completing) to the *Hawkins*, and as Fleet Medical Officer; and W. L. Hawkins to the *Yarmouth*, for passage home. Surg. Lt. W. Young to the *Ark Royal.*

Surg. Lt. L. P. Spero, R.N.V.R., to be Surg. Lt.

ROYAL ARMY MEDICAL CORPS.

Maj. H. B. Kelly to be Lt.-Col., vice Lt.-Col. B. A. Craig to ret. pay.

Maj. M. Keane retires on retd. pay and is granted the rank of Lt.-Col.

Capt. R. I. Sullivan is secd. for service under the Colonial Office.

J. M. Johnston to be temp. Lt.

SUPPLEMENTARY RESERVE OF OFFICERS.

Lt. G. Marshall, late Temp. Lt., R.A.M.C., to be Lt.

TERRITORIAL ARMY.

Capt. J. L. Johnston (late R.A.M.C.) to be Lt., and relinquishes the rank of Capt.

Capt. A. R. Ross to be Div. Adjt., 56th (1st London) Div., T.A., vice Capt. G. G. B. Holroyde, R.A.M.C., who vacates that appt.

Capt. J. H. Fletcher, R.A.M.C., to be Div. Adjt., 48th (South Midland) Div., T.A., vice Capt. F. G. L. Dawson, R.A.M.C., who vacates that appt.

Supernumerary for Service with the O.T.C.: Lt. L. B. Maxwell to be Capt.

General List: 2nd Lt. A. Barr (late R.G.A.), to be Lt.

ROYAL AIR FORCE.

Medical Branch: Flight Lt. T. J. Thomas is promoted to the rank of Squadron Leader.

Flight Lt. (hon. Squadron Leader) E. A. Aldridge relinquishes his temporary commission on ceasing to be employed.

Flying Officer H. J. Henderson (temp. Lt., Dental Surgeon, General List, Army) relinquishes his temporary commission on ceasing to be employed.

INDIAN MEDICAL SERVICE.

Revised rates of furlough pay in India for regular executive officers of the I.M.S. in military employ have been announced. Maj. W. G. Hingston is appointed Surgeon Naturalist Marine; Maj. G. Covell has been appointed temporarily to the Medical Research Department and posted to the Central Research Institute, Kasauli; Maj. S. S. Sokhey, who was one of the selected candidates for the Rockefeller Foundation Scholarship of 1922–23, has returned to India and has been appointed Medical Officer in Charge of the Biochemical Unit of the Haffkine Institute, Bombay; Maj. R. F. D. MacGregor, on return from leave, has been posted as Agency Surgeon, Bhopal; Col. R. P. Wilson, Acting Surgeon-General, has vacated his seat on the Bengal Legislative Council in favour of Maj.-Gen. R. Heard, who on return from leave has resumed his substantial appointment as Surgeon-General with the Government of Bengal; Lt.-Col. W. J. Powell, Inspector-General of Prisons, acts as Director of Public Health of the Central Provinces in addition to his own duties.

Correspondence.

"Audi alteram partem."

MEDICAL MANIFESTOES.

To the Editor of THE LANCET.

SIR,—During the past ten days I have received circular letters from two medical bodies. Each body proposes to issue a memorial or manifesto. One states that agreement will be assumed unless dissent is made. The other concludes: "If I do not hear from you by return of post I shall conclude that you are willing to allow your name to be published in this connexion." And accordingly the names of non-committed men will be attached to a manifesto to the lay press which begins: "We, the undersigned——." It seems to me that this procedure is wrong, and that if it be allowed medical manifestoes will be treated with contempt.

I am, Sir, yours faithfully,
N. BISHOP HARMAN.

Harley-street, W., Nov. 17th, 1925.

THE SANITATION OF DAVOS.

To the Editor of THE LANCET.

SIR,—As I had the privilege of representing Great Britain—if unofficially—along with Dr. Leonard Hill at the recent climatological congress in Davos, I should like to supplement the account of the climatic advantages of that place, described by Dr. Hill and Dr. Bernard Hudson in your issue of Oct. 24th, by a few remarks on its sanitation from the point of view of a medical officer of health.

On arriving there on August 13th last I was first struck by the general cleanliness and freshness of the town—a feature which I may say it has in common with most other towns and villages in Switzerland. The streets are wide, clean, well paved and drained, so that rain does not remain long on their surfaces. The hotels, sanatoria, &c., are supplied with the most modern sanitary fittings for baths and lavatories, and would satisfy the most exacting health officer. Somewhere about the commencement of 1900 the whole sewerage and drainage systems were thoroughly overhauled, and with the help of the swift mountain torrents and a good supply of water, both sewers and drains are kept thoroughly and regularly flushed. The drinking water is cool, sparkling, and most refreshing, and comes from gathering grounds in the mountains where risk of contamination is nil.

The most efficient and thoroughly up-to-date piece of sanitation I had the opportunity of examining was the system of collection and disposal of house refuse. In the first place, in 1913 Davos got a special Act of Parliament enabling the town council to acquire land, put up a refuse destructor, and provide for the collection and removal of household dust in suitable movable bins supplied by them. The working charges are provided for by levying a contribution on hotels, &c., according to the amount of household refuse removed. Non-compliance with this Act and the regulations made under it is punishable by a fine of from 5 to 50 francs.

The bins are cylindrical in form, the diameter at the top being $16\frac{1}{4}$ in., the bottom $15\frac{1}{2}$ in., and the height 2 ft. 8 in. They are constructed of very strong galvanised iron, and have a tightly fitting lid, which *must* be kept closed when the bins are in use. In summer when full they are placed on a lorry which calls for them, and in winter these lorries are replaced by sledges. They are then driven to the railway station, placed on a special wagon and sent to the refuse destructor, which is attached to the gasworks in Laret, some six English miles away.

From the railway there is a special siding running into the destructor where the dustbins are unloaded. The destructor is of the high temperature type with forced draught, and after removal of the lid the bin is placed in a special mechanical contrivance in which it can be easily inverted, and by pulling out a damper which replaces the lid the whole of the contents fall through an opening of the same diameter as the bin, straight into the furnace. In this process not a particle of smoke or dust can escape while the bin is being emptied. The bin is again turned upright, removed from the holder, and placed in a washer, where it is thoroughly cleansed by boiling water. This is provided by a steam boiler attached to the furnaces. The whole destructor is really part and parcel of the gasworks, and the steam raised is used in the first place for driving the machinery of the destructor, and the surplus is passed on to the gasworks to assist in driving their machinery. If there is insufficient steam to drive the destructor the deficit comes from the gasworks. The cleansed bins are returned to the town as required, and a sufficient stock is kept by the council to leave empties as the full ones are removed.

Complete combustion of the refuse is the first consideration, and suitable mechanical arrangements are made for separating the clinker from the lighter materials, as well as dealing with gases. The main point seems to me is that the dust once it is deposited in the bins only leaves them to go direct into the furnace, and, therefore, no opportunity is given for fly breeding or nuisances being created in its handling or disposal.

I am, Sir, yours faithfully,
R. KING BROWN, M.D.

Bermondsey, Nov. 7th, 1925.

PARACUSIS WILLISII.

To the Editor of THE LANCET.

SIR,—Since Thomas Willis called attention to the phenomenon in the seventeenth century paracusis has been regarded as symptomatic of oto-sclerosis unaccompanied by labyrinthine involvement. The phenomenon is of value in diagnosing fixation of the stapes and in judging the prognosis of the case. The fact that the low-tone limit is raised while high tones are unaffected in purely obstructive deafness suggests that the ossicular chain is not a mere passive pathway for the conduction of sound waves, but plays an active part in rendering low musical tones perceptible. The individual with normal hearing regulates the force of his voice by his own perception; he instinctively raises his voice in a noisy circle. This is a striking example of Sherrington's "auditory and speech reflex." An oto-sclerotic, on the other hand, does not raise his voice in a noisy railway carriage, but persists in talking in a low well-modulated voice hardly audible to a companion. He maintains this characteristic tone whether talking in a noisy circle or a quiet room. Evidently the coarse vibrations of long amplitude produced by extraneous noises fail to stimulate the perceptive mechanism of an oto-sclerotic.

The oto-sclerotic, then, has certain advantages over one who has normal hearing. The coarse vibrations of long amplitude produced by railway trains and the like fail to reach his consciousness; he calmly concentrates on his friend's talk. Knowing his disability he pays greater attention to the conversation. The normal individual instinctively raises his voice in a noisy place to the great advantage of his oto-sclerotic friend, who is not disturbed by the extraneous noises quite to the same extent. Further, the man knowing that he is talking to one who is hard of hearing the normal individual sympathetically raises the force of his voice. All these factors, working together, enable the oto-sclerotic to follow conversation in a noisy circle with ease.

I am, Sir, yours faithfully,
J. M. DAMANY, M.B., B.S.

Oxford-road, Putney, S.W., Nov. 17th, 1925.

FOOD EDUCATION SOCIETY.

To the Editor of THE LANCET.

SIR,—Our late premises are coming down, but we have been fortunate in obtaining an office in the new Mary Sumner House of the Mothers' Union, between whom and ourselves there has been in the past cordial coöperation. The expenses of removal and furnishing and of notifying the press, members, and correspondents of our change of address are necessarily considerable. The Committee have accordingly resolved to raise, as in 1909, a special fund for the purpose. Moreover, in view of the gratifying testimony received from all parts of the world, including the formation of a branch for the State of Victoria, the Committee feel that the moment is opportune for an effort to free the society from a deficit—materially reduced, but still standing at £350—which is mainly the result of its labours for the prevention of dental disease. The service to the nation thus rendered has been recognised by the Dental Board of the United Kingdom (a Government body), on whose late advisory committee the society was represented, as likewise by the President of the British Dental Association and by Sir George Newman.

The society is also urgently in need of funds to reprint such favourites as "Economical Dishes for Workers" (over 100,000 sold), "Diet for Brain Workers," "Sugar, Why Worry About It?" "The Feeding of Nurses" (edition of 1000 exhausted), and to issue fresh publications, with reports of its many-sided activities.

Donations should be addressed to the Hon. Treasurer, Sybil, Viscountess Rhondda, at the undermentioned address.—We are, Sir, yours faithfully,

HARRY CAMPBELL,
Chairman.
H. BALDWIN,
Vice-Chairman.
SYBIL RHONDDA,
Hon. Treasurer.

24, Tufton-street, Westminster, S.W. 1.,
Nov. 13th, 1925.

PRE-CANCEROUS STATES.

To the Editor of THE LANCET.

SIR,—May I be permitted to supply a few additional details to the condensed report of my remarks in the course of the discussion on pre-cancerous states reported in THE LANCET of last week (p. 1022). When dealing with the changes found in chronic mastitis, and referring to the part played by the basement membrane in guiding us to form an opinion as to whether carcinoma is present in certain doubtful cases, I said :—

> "In certain cases it will be found that—perhaps in one small area—this smooth regular band or limiting membrane is absent, the clumps of epithelial cells are lying loosely in cavities and not attached to the walls . . . the border-line has been crossed and carcinoma is present. . . . In such examples as I have endeavoured to outline above in which the main part of the section consists of inflammatory tissues and only a small portion is carcinomatous, it appears to me quite evident that inflammation has preceded the new growth. Carrying the argument a step further—the above evidence points clearly to the great probability that in many instances a breast affected with chronic inflammation is in a pre-cancerous state."

It will be seen therefore that my view is that in *many instances* breasts affected with mastitis are in a pre-cancerous condition; but, if we carry things back too far, we shall be placed in the position of having to state that everyone affected with some trifling inflammatory affection is in a pre-cancerous condition, which is absurd.

As to papillomata, it is obvious that when invasion of the deeper tissues by the superficial cells has taken place, carcinoma is already established. It is the presence in some papillomata of groups of squamous cells at the base lying in masses of small round inflammatory cells that suggests a pre-cancerous stage.

I am, Sir, yours faithfully,

Royal Northern Hospital, Nov. 16th. ERNEST H. SHAW.

THE CINEMA IN NEUROLOGY.

To the Editor of THE LANCET.

SIR,—The writer of the annotation with the above title, which appeared in your issue of Nov. 7th, is in error when he states that the films exhibited in Paris by Dr. S. Philip Goodhart "are the only ones in existence dealing (from the technical aspect) with nervous disease." On the contrary, films of an analogous kind have frequently been made and used in this country, as is well known. As a single instance, I may mention those made by Dr. A. F. Hurst during the war and dealing largely with functional nervous disease. When delivering the Croonian lectures last summer before the Royal College of Physicians I exhibited two long films devoted entirely to the technical side of some neurological conditions, and included in them were sections made by the slow-motion camera.

I am, Sir, yours faithfully,
S. A. KINNIER WILSON.

Harley-street, W., Nov. 16th, 1925.

SPIRITUAL HEALING AND MODERN MEDICINE.

To the Editor of THE LANCET.

SIR,—Will you allow me to disclaim, in the most formal fashion, any but a few slight correspondences between the remarks attributed to me in THE LANCET of last week and those which I did make at a meeting of the Hunterian Society on Nov. 9th. My remarks were read from a typescript, now before me, which, after the meeting, was in the hands of the reporters present.

I understand, however, that the impossibility of forwarding a proof accounts for a version which substitutes the words *medical* for *metaphysical*, and *material grounds* for *ratiocination*, at the same time making use of expressions and phrases never employed by me during the debate. I did not say that psycho-analysts had shown that states of mind must be held responsible for many organic conditions. I did say that, as a result of the work of the Viennese psycho-analysts, it was beginning to be believed by many that states of mind must be held responsible for many bodily disorders and for at least the functional beginnings of organic disease. The point of a remark made to me not very long ago by the late Dr. Sidney Martin is completely destroyed. The old curé in "Maria Chapdelaine" (and no old French physician) said that while the doctors do what they can, only God understands diseases. He did not say that only God understands humanity. I said that longevity is marked and the standard of physical health extremely high amongst the Quakers; I did not say that the standard of health was nowhere so high as amongst the Quakers.

More importantly: I did not say that a belief in miracles was essential to the doctor's art. I said that the conception of miraculous healing, whatever the historical evidence, is as necessary to our philosophy of the healing art as is our knowledge of the reparative power possessed by the salamander or newt. Above all, far from saying that the miracle of healing represented the manifestation *in ourselves* of a certain power, I said that it represented, for the physician, the manifestation, *in the Absolute*, of a certain power!

There are many other errors and misleading paraphrases of my remarks in this report; may I beg, therefore, for lenient consideration at the hands of your readers?

I am, Sir, yours faithfully,
F. G. CROOKSHANK.

Wimpole-street, W., Nov. 16th, 1925.

*** Our reporter's claim to have given a very fair account of Dr. Crookshank's general attitude is supported by others who were present.—ED. L.

DEFECTIVE ILLUMINATION IN RELATION TO EYESIGHT.

To the Editor of THE LANCET.

SIR,—In an annotation with this title in your issue of Nov. 7th, referring to a bulletin issued by the United States Public Health Service, appears the rather contradictory comment :—

> "We find no evidence that defective illumination is in itself a cause of permanent injury to the eyesight. . . On the other hand, there is plenty of evidence . . . that work for the eyes under defective illumination involves fatigue, and that this may cause permanent injury to 'weak' eyes."

Is this not rather quibbling with the original cause ? It is quite possible that the only effect of defective illumination on good normal eyes might be fatigue, but even fatigue alone connotes lowered resisting power, and again how many eyes are normal ? There is not an atom of doubt that defective illumination does accentuate eyestrain, such eyestrain being possibly produced by a very small amount of astigmatism or anisometropia or imbalance (not unbalance) of the muscles. The end-result of such a condition may show itself as (*a*) local disease of the eyes owing to lowered resistance to germs, some of which are always present producing some form of conjunctivitis, or even deeper trouble, such as cyclitis or even iritis ; (*b*) general effects of eyestrain, due to loss of nerve energy, manifesting itself in headaches, insomnia, indigestion, &c. I look upon the recent improvement in the illumination of public buildings, offices, &c., as one of the very important methods of "preventive medicine."

I am, Sir, yours faithfully,
ERNEST CLARKE.

Chandos-street, W., Nov. 16th, 1925.

⁂ The harmfulness of defective illumination is agreed ; it is surely of more than verbal interest to determine precisely how the harm is done. We do not share Mr. Clarke's objection to the American use of the word unbalance.—ED. L.

X RAYING OF TEETH.

To the Editor of THE LANCET.

SIR,—The letter from Sir Gould May in your issue of Oct. 31st raises two important points, on which, as a dental surgeon, I should like to comment. The two points are these : the value of radiographs of the teeth and reports based on the radiographic findings, and the significance of dental sepsis as a factor in general disease.

Concerning the first. Sir Gould May suggests very plainly that either radiographs of the teeth and jaws have little diagnostic value or else that the reports made by radiologists are made with so little judgment and knowledge that no reliance can be placed on them. I do not suppose that it is intended, but the letter could be read as though it were a reflection on the bona fides of radiologists. A dental radiograph, like that of any other part, is a shadow photograph in two dimensions of solid structures. Fallacies may arise which are due to distortion, though they may simulate a pathological condition, such as the appearance of the mental foramen which has before now been mistaken for apical rarefaction. There are also fallacies due to the technique which can mislead the unwary. A competent radiologist should, however, be able to eliminate such errors, and I doubt if many reports contain inferences which are based on an actual misinterpretation of the films. The report which accompanies the radiograph is not a diagnosis of the pathological conditions of the teeth and jaws, and never can be. It is an aid to diagnosis, and often of great value. Two factors go to the making of a good report of a dental radiograph—a sound technique and a thorough knowledge of the normal anatomy of the teeth and jaws, as well as of their pathology. Radiographs may be taken by radiologists who are medical practitioners, by dentists who usually limit themselves to dental radiology, though by training and usually by experience they are familiar with dental surgery in its clinical aspects ; and by radiographers who have no medical qualification and whose knowledge of the anatomy and pathology of the teeth and jaws cannot be very extensive, though their technical achievements are frequently of a high standard. All three may take dental radiographs of great technical excellence, though candour compels me to state that not infrequently I have seen dental films taken by general radiologists so distorted that no report of any value could possibly be based on them. (This is not to be taken as a reflection on radiologists or as suggesting that only dental radiologists should take dental films.) Reports on films, however, vary much in their value. To the dentist familiar with the teeth they may add considerably to the value of the films or they may add nothing. Obviously the greater the knowledge of the anatomy and pathology of the teeth on the part of the radiologist, the better is his report likely to be. To the dentist the radiograph will always be of more importance than the report, for he should be in a position to interpret the films for himself, though I cannot agree with those dentists who tacitly regard the radiologist's report as unnecessary and without practical value.

Sir Gould May infers that the reports invariably state that disease is present. Does he think that radiologists have fallen into the habit of doing this as a routine, whether the films justify it or not, much as some osteopaths are said always to find displacement of the vertebræ ? It must be remembered that when a patient is sent to have radiographs taken of the teeth there is generally primâ facie reason to suppose some degree of dental infection. But the real point is the degree of value attaching to a radiograph. It is an aid to diagnosis only. A diagnosis of the dental condition should be based on *all* the data available. It involves a clinical examination by a dentist with all the methods at his disposal. Among these radiography is of considerable value, but only when taken in conjunction with the clinical examination. Every dentist knows that a careful examination of the mouth may reveal more than a radiograph, though conversely the latter may reveal what a clinical examination is unable to detect. But often radiography is used as the only method of diagnosis, and hence, I believe, arise the difficulties to which Sir Gould May alludes.

It is becoming an increasingly common practice for doctors to send their patients direct to the radiologist for a film of the teeth. Armed with the radiologist's report, plus what he may discover (or imagines he discovers) by a casual inspection of the mouth, he will often condemn the teeth in advance and then send the patient to a dentist with a statement of what he considers should be done. I submit that this is the incorrect procedure, and must inevitably lead to blunders. The proper way would be for the doctor, who has reason to think that the patient's dental condition may be related to some ailment elsewhere, to send the patient first to his dentist with a request that the latter should investigate carefully the dental condition and report thereon to the doctor. The dentist will obviously get all the data available, including so valuable a procedure as a radiograph. His conclusions as to the conditions present, their pathological significance, and the best treatment to be pursued, may not be infallible, but they will be based on all the evidence instead of a part only. The doctor and dentist should work together as members of a team who have the common aim of desiring to better the bodily condition of their patient. This might not be always feasible, but often it could be done and it would be far preferable to rely on the imperfect evidence of radiography unbacked by the all-round examination of the dentist.

As to Sir Gould May's other point, the rôle of dental sepsis in disease, this is a vast subject. Admitting that the hypothesis of focal infection may have been pushed to too extravagant a length by some, yet there is a wealth of evidence to show that dental sepsis is often a potent factor in leading to a widespread train of diseased conditions elsewhere. This in itself is a justification for the interest taken in this subject, though it does not justify a belief that extraction of the teeth is a panacea to be applied in every case of disease elsewhere.

I am, Sir, yours faithfully,
Wimpole-street, W., Nov. 14th, 1925. A. T. PITTS.

To the Editor of THE LANCET.

SIR,—It seems to me the real point at issue is not whether teeth should or should not be examined by X rays, or any other rays, but what use will be made of the information obtained. I have had much to do with Americans; they believe they can see further through a stone wall than most people, and have therefore a strong predilection to prophesy what they think is going to happen, and then to suggest treatment for the disease which will be present later on rather than to consider the complaint before them. In a consultant this power of prevision is invaluable; in the general practitioner it is very dangerous. For simplicity may I illustrate? My wife went to a dentist, who told her she had pyorrhœa and must have her teeth out. I gave her some quinine and sulphuric acid mixture, and sent her back in three months to have a tooth filled, when the pyorrhœa was gone. By all means use all these new powers we possess, but let us not forget to cure the patient. I am astonished at the number of people I meet who have no teeth, and yet are still suffering from the disease for which the teeth were extracted; in some cases simple medical remedies have removed the trouble. Cure of the patient should be our object rather than the diagnosis of disease, which is not always possible and is of little interest to the patient. Diagnosis is of great interest to the doctor, but the extraction of all the teeth is a method of diagnosis which is being carried too far to-day.

I am, Sir, yours faithfully,
Bournemouth, Nov. 16th. C. G. S. BARONSFEATHER.

DIALACETIN IN EPILEPSY.—Dr. C. Worster-Drought writes to correct the dosage of dialacetin in epilepsy contained in his letter which appeared in THE LANCET of Oct. 24th (p. 892). The dose of dialacetin should read: ½ to 1 tablet either at night, or twice daily, and not 1½ gr. as stated. Each tablet of dialacetin contains 4 gr. of allylparacetaminophenol and 1½ gr. of dial. The dose in epilepsy, therefore, is 2¾ to 5½ gr. of the combined substances at night only in nocturnal cases, and twice daily in others.

DONATIONS AND BEQUESTS.—Mr. W. L. Bowles, of Cardiff, has given £1000 to endow a bed at the Cardiff Royal Infirmary to commemorate his seventieth birthday.—Sir Robert Appleby Bartram, of Thornhill Park, Sunderland, has left by will £5000 to the Sunderland Royal Infirmary, and £5000 (additional) to the Sunderland Royal Infirmary for the Children's Hospital.—The West Riding Coalowners' Association has given £25,000 to the Leeds University Appeal Fund.—Mr. E. G. Bates, a former member of the Croydon Council, has given another £1000 for the pension fund for the blind which bears his name. Mr. Bates started the fund in 1919 with £3000, and has added to it since. The capital invested is now £8000.—Lady Rebecca Inglis, of Reigate and Bath, who left estate of £76,301, directed that her jewellery be sold and the net proceeds given to the Throat and Chest Hospital, Golden-square, London. She also left £1000 to the Reedham Hospital for Children, and £1000 to Dr. William Stanley Melsome, her medical attendant at Bath. After other bequests, the residue of her property—which will amount to about £50,000—to be equally divided between St. Dunstan's Hostel for Blinded Sailors and Soldiers, St. George's Hospital, the Middlesex Hospital, St. Bartholomew's Hospital, the Hounslow Hospital, the Reigate and Redhill Hospital, the Royal Blind Pension Society, the Royal Hospital for Incurables, the Orphan Working School, the Infant Orphan Asylum, and the London Orphan School, Watford.—The Refuge Assurance Company, Limited, has sent a cheque for £1000 to the Lord Mayor of Manchester for the Manchester Cancer Research Fund.—A cheque for £1547, the proceeds of a pageant in the Stretford area of Manchester, has been given to the Basford House Hospital, which will be officially opened in March next year.

Obituary.

JUAN GUITERAS.

THE death has occurred in Cuba of Prof. J. Guiteras, an authority on yellow fever and other tropical diseases, in his seventy-fourth year.

PROF. GUITERAS.

Juan Guiteras y Gener was born at Matanzas in Cuba in 1852. After being educated in Cuba he went to the University of Pennsylvania and became M.D. and Ph.D. in 1873. After six years as resident and visiting physician at the Philadelphia Hospital he served for ten years in different parts of America in the Marine Hospital Service. Later he became professor of pathology in the University of Pennsylvania, and in his writings and teaching laid especial and uncommon emphasis on the necessity for looking at pathological processes from a physiological viewpoint. From 1900 onwards he occupied the chair of general pathology and tropical diseases in Havana University, which was the first chair of its kind in America, and in 1909 became Director of Public Health of Cuba and President of the National Board of Health. Guiteras's name is chiefly associated with the campaign against yellow fever. He served as expert adviser in all the epidemics of this disease in the United States since 1881, and it was he who established the importance of yellow fever in children and of benign cases in propagating epidemics. He confirmed experimentally the work of the American Commission on the transmission of yellow fever by the mosquito, and by his active propaganda was able to win agreement for C. J. Finlay's original thesis that the disease was actually transmitted by the bites of the insect. On the staff of General Shafter in the Santiago campaign of 1898 he did good service, and was later given scope for his work under the Yellow Fever Commission set up by the International Health Board of the Rockefeller Foundation. The success of the antimosquito measures which he advocated in Cuba is shown by a decrease in the death-rate from yellow fever in Havana from 81 per 1000 in 1876, for instance, to nil in 1909. Guiteras's attention was, however, by no means confined to yellow fever. He was the first to demonstrate *Filaria bancrofti* in the United States and ankylostomiasis in Cuba. His wide interests and pioneering spirit were shown by his publication, in collaboration with Emilio Martinez, of the *Revista de Medicina Tropical*, which was the first journal of tropical medicine in the continent of America and the second in the world. Prof. Guiteras was a vice-president of the Association of Health Officers of North America, and was also well known in the United States for his interest in the political position of his native island. He was a cousin of the late Dr. Ramon Guiteras, urologist, of New York.

PROF. PAUL HEGER.

A GREAT physiologist and a distinguished Belgian savant has passed away by the recent death, the sad result of a motor accident, of Dr. Paul Heger, professor in the Faculty of Medicine of Brussels University. He was born in Brussels in 1846 and was the son of Prof. Constantin Heger, the friend and teacher of Charlotte Brontë.

Dr. Heger studied medicine in Brussels, and having graduated as M.D. began practice in his native city, directing his attention more particularly to the study of nervous diseases. Amongst his patients was

Mr. Ernest Solvay, and it was largely at his instigation that Dr. Heger relinquished the practice of medicine and resolved to devote himself to physiology. To this end he studied in Leipsic under Prof. Carl Ludwig in the mid-seventies and while there devoted special attention to the perfusion of blood through surviving organs, the particular problem he studied being perfusion of blood through the excised liver to determine to what extent nicotine was absorbed by the liver cells. He was appointed professor of physiology at the University of Brussels, a post which he held until 1907. In 1899 he became director of the physiological institute, which had been erected at the expense of Mr. Solvay in the Parc Léopold—an institute which was a veritable crystal palace, so excellent was the natural lighting. There he and his pupils carried out important work, and many of his researches were published in the *Archives Internationales de Physiologie*, of which he was joint editor with Prof. L. Fredericq, of Liège. On his retirement from the active pursuit of physiology he was appointed honorary professor and president of the University. During the war he took a leading part in the organisation of the medical equipment of the Belgian Army and busied himself in clinical work in the city of Brussels, where he was president of the clinic to which Miss Edith Cavell was attached, and it was he who brought her body to England.

Tall, erect, and of striking personality, Heger was adored by his pupils and assistants and beloved by all who knew him. He had a wonderful and entrancing power of graphic exposition of a subject, the problem in hand seeming to unroll itself with perfect lucidity. When, in 1912, the British Association met in Dundee, Prof. Heger was one of the foreign men of science on whom the University of St. Andrews conferred the degree of LL.D. His wife, who died several years ago, was the daughter of a banker in Brussels. He is survived by a son, who has made for himself a distinguished position in medicine in Brussels, being specially interested in medico-legal medicine.

GEORGE REID, O.B.E., M.D., C.M., D.P.H. Aberd.

Dr. George Reid, formerly medical officer of health to the Staffordshire County Council, died at Stafford on Nov. 7th at the age of 71. He was born in Aberdeen and studied medicine at the University of his native city, graduating M.B., C.M., in 1875, and M.D. in 1881. In 1890 he obtained the D.P.H. Aberd. and was appointed medical officer of health for Staffordshire County Council, an office which he filled for 32 years. Upon his retirement in 1922 he was appointed consultant medical officer to this county, which post he held at the time of his death. Dr. Reid also acted as school medical officer for Staffordshire, medical officer to the Staffordshire, Wolverhampton and Dudley Joint Committee for Tuberculosis, medical officer to the South Staffordshire Joint Small-pox Hospital Board, and examiner in State medicine to the Universities of Cambridge and Birmingham.

At the beginning of Dr. Reid's term of service to the county, Staffordshire had an unenviable record as regards the disposal of human excreta and refuse. Dr. Reid set his face firmly against pollution of rivers and streams, and under his direction the Public Health Committee of the council were successful in persuading the local authorities to disburse nearly two million pounds in schemes to purify the Staffordshire waters. The effect was soon apparent in a reduced typhoid mortality. The experiment in biological treatment of sewage at Hanley attracted much attention, and in 1906 he gave evidence before the Royal Commission on Sewage Disposal with reference to bacterial filtration of sewage, the outcome of which was the erection, at the instance of the Commission, of works to establish Dr. Reid's conclusions. He served also on the Departmental Committee on the use of lead in pottery which sat for two years and reported in 1910. He was early in the field with a scheme for the control of ophthalmia neonatorum. Dr. Reid was the author of a valuable text-book on "Practical Sanitation," which first appeared in 1892, with the primary intention of guiding sanitary inspectors in their work. Successive editions of this book, up to the twentieth in 1921, registered the progressive outlook of a public sanitary department. Dr. Reid was the originator of the Staffordshire or pavilion type of elementary school building, which has been extensively adopted in this country and abroad.

Dr. Reid was at one time president of the Society of Medical Officers of Health, and while holding this office he was associated with Sir Alfred Keogh, then Director-General of the Army, in organising the sanitary services of the Territorial Forces, and he was one of the first sanitary officers to be appointed with the rank of Major. In this capacity he served with the forces at the outbreak of war.

Dr. Reid, who was predeceased about a month ago by his wife, leaves a son and a daughter.

Medical News.

University of Oxford: Lectureship in Embryology.—The University of Oxford has accepted a bequest by Mrs. Constance Jenkinson for the endowment of a lectureship in comparative and experimental embryology in memory of her husband, John Wilfred Jenkinson, of Exeter College, who was killed in the war.

University of Cambridge.—Applications are invited for a Pinsent-Darwin Studentship in Mental Pathology. The studentship is of the annual value of about £200 and is tenable for three years in the first instance. The student may be of either sex and need not be a member of the University of Cambridge. He shall engage in original research in Cambridge or elsewhere, but may, subject to the consent of the managers, carry on educational or other work concurrently. Further particulars may be obtained from the Registrary of the University of Cambridge, and applications for appointment should be sent before Dec. 1st, 1925, to the secretary, Pinsent-Darwin Studentship, Psychological Laboratory, Cambridge. This studentship was founded in 1924 by the benefaction of Mrs. Pinsent and Sir Horace and Lady Darwin for the purpose of promoting research into any problem which may have a bearing on mental defects, diseases, or disorders.—The Managers of this Studentship announce that they have given a grant to Miss M. F. Bridie of Birmingham, in order to facilitate her investigations as to the effect of education among the mentally deficient.

University of London.—The extensions to the Department of Physiology at King's College have now been completed, and were formally opened on Nov. 6th by Emeritus Professor W. D. Halliburton, F.R.S. A reception was held in the new laboratories at which were present many well known physiologists and biologists. The new building will provide facilities for experimental research, for the teaching of advanced practical mammalian physiology, and a professor's room. In addition, the rooms formerly occupied by the Bacteriology Department have been taken over for biochemistry, the provision of animal and polarimeter rooms, and for a staff room and library. The reception was followed by a public inaugural lecture on Science and Culture by Mr. Julian Huxley, who has recently been appointed to the Chair of Zoology at King's College, in succession to the late Prof. Arthur Dendy, F.R.S.

St. Thomas's Hospital.—A lecture on the Earlier Inhabitants of London will be delivered by Prof. F. G. Parsons in the Governors' Hall, St. Thomas's Hospital, at 5 P.M. on Friday, Dec. 4th. During the lecture, which will be illustrated by lantern slides, skulls of the various people mentioned will be shown. Admission is free, without ticket.

Charing Cross Hospital Medical School.—The twelfth biennial Huxley Lecture on Recent Advances in Science in their Relation to Practical Medicine will be delivered by Sir Oliver Lodge, F.R.S., on Thursday, Dec. 3rd, at 3 P.M., in the Out-patients' Hall of the Hospital. Admission free (to medical men), without tickets.

A course of two lectures on the Efficiency of the Heart and its Measurement will be given by Prof. Yandell Henderson (Professor of Applied Physiology in Yale University) in the Physiology Theatre, University College, Gower-street, London, W.C. 1), on Nov. 30th and Dec. 1st, at 4.30 P.M. At the first lecture the chair will be taken by Prof. E. H. Starling, F.R.S. Admission free, without ticket.

The Schorstein Memorial Lecture will be delivered by Sir Humphry Rolleston on Dec. 4th, at 4.15 P.M., at the London Hospital Medical College on Lymphadenoma.

University of Manchester.—The Knight Travelling Fellowship in Psychological Medicine has been awarded to Mr. L. C. Chevens, M.R.C.S. Eng., L.R.C.P. Lond., D.P.H. Manch., assistant medical officer in the Cheshire County Mental Hospital, Macclesfield.

University of Glasgow.—The degree of doctor of medicine (M.D.) was conferred on the following candidates on Nov. 14th :—Hugh S. D. Garven, B.Sc., Ch.B. (with honours) ; Charles M. Smith, M.B., Ch.B. (with high commendation).

Royal Colleges of Physicians of London and Surgeons of England.—As the result of the Final Examination, held from Oct. 6th to 29th, the following candidates were approved in the subjects indicated, but are not eligible for diplomas :—

Medicine.—B. W. Alexander, St. Bart.'s ; R. E. Barrett, London ; H. L. Belcher, Guy's ; E. I. Bieber, Liverpool ; Hilda M. P. Bond, St. Mary's ; R. Broomhead, Leeds ; P. R. Buckton and J. C. K. Chilcott, King's Coll. ; J. H. Chitty, Guy's ; Olive C. Crowley, Charing Cross ; T. W. Davies, Cardiff ; T. E. Davies, St. Thomas's ; Elaine O. H. Earengey, Univ. Coll. ; R. Edmondson, Manchester ; J. A. Eyres, King's Coll. ; R. A. Fitzsimmons, Charing Cross ; Rachel D. Fox, Royal Free ; J. Freudenheim, Charing Cross ; S. C. Gawne, Liverpool ; P. J. Gonsalves, Guy's ; R. M. Greenop, King's Coll. ; H. L. Groom, Univ. Coll. ; A. A. M. Groot, Leiden and Westminster ; B. Guyster, London and King's Coll. ; Kathleen M. Halloran, Calcutta ; K. A. Hamilton, St. Bart.'s ; H. G. Harvey, St. Thomas's; G. F. Henderson, Univ. Coll. ; T. H. Hobbes, St. Bart.'s ; J. E. Howard, St. Mary's ; Mary H. McC. Huggett, King's Coll. ; B. D. Jain, Charing Cross ; Edith M. Little, Katharine G. Lloyd-Williams, and Marjorie Low, Royal Free ; Elsie Lyon and Margaret B. MacDonald, Charing Cross ; G. L. M. McElligott, St. Thomas's ; Evelyn T. D. Maclagan and Mary A. Marshall, St. Mary's ; E. H. Moir and J. E. C. Morton, St. Bart's ; E. R. Owen, Liverpool ; B. N. Pajnigar, London ; J. G. Paley, St. Bart.'s ; H. A. Picton, Birmingham ; D. C. Price, St. Bart.'s ; E. K. Pritchard, St. Thomas's ; Henrietta Procter and Muriel A. Pugh, Charing Cross ; J. H. Randall, Univ. Coll. ; Margaret G. P. Reed, King's Coll. ; H. G. St. M. Rees, Cardiff ; R. P. Ross, King's Coll. ; D. W. Seth-Smith, St. George's ; W. D. Sheldrake, Guy's ; Nancie A. Simmons, Charing Cross ; Beryl M. Stevens, Royal Free and St. Mary's ; R. D. Summers, London ; E. M. Town-Jones, Leeds ; Mary M. Tulloch, Charing Cross ; Aimee A. L. Vaillant, Charing Cross and Liverpool ; H. D. Weatherhead, St. Thomas's ; Gwendolen I. Wilkins, Royal Free ; Beatrice A. Wilkinson, King's Coll. ; Jane C. Williams, St. Mary's ; J. E. B. Williams, Univ. Coll. ; J. H. Williams, Cardiff ; and Eileen C. Wise, King's Coll.

Surgery.—C. E. Allen, Guy's ; F. J. Bach, St. Bart.'s ; M. Behr, Middlesex ; H. L. Belcher, Guy's ; R. H. Bettington and M. S. R. Broadbent, St. Bart.'s ; G. H. Brown, Liverpool ; H. A. Bulman, Middlesex ; A. Byrne-Quinn, St. Thomas's ; H. A. Byworth, St. George's ; G. P. Chandler, A. L. Canby, and R. Childs, St. Thomas's ; J. H. Chitty, Guy's ; Violet H. Comber, Univ. Coll. ; A. B. Connell, St. Thomas's ; F. R. Corfe and J. B. Crabtree, St. Bart.'s ; B. B. Dalal, Univ. Coll. ; L. Dass, Middlesex ; S. T. Davies, Univ. Coll. ; A. C. de Sousa, Middlesex ; T. S. Dewey, St. Thomas's ; R. P. S. Edden, St. Mary's ; D. C. McC. Ettles, Guy's ; S. H. Evans, Sheffield ; B. Fink, Manchester ; E. L. Fothergill, St. Thomas's ; W. L. Gillbard, St. Bart.'s ; A. P. Gorham, Bristol ; C. R. M. Greenfield, St. Bart.'s ; T. R. Hill, Guy's ; W. S. Hinton, St. Bart.'s ; F. R. How, St. Thomas's ; N. C. Hypher, London ; R. J. Isaac, St. Mary's ; K. N. Isherwood, Leeds ; T. Jones, Cardiff ; F. J. L. Lang, St. Mary's ; F. W. Law, Middlesex ; J. R. E. Lee, Liverpool ; H. P. Lehmann, St. Bart.'s ; E. A. Lewis, St. George's ; P. C. K. Lewis, Birmingham ; R. A. V. Lewys-Lloyd, St. Bart.'s ; G. F. H. McCormick, Univ. Coll. ; E. H. Mackenzie, St. Thomas's ; A. R. Marsh, Guy's ; I. O. Martin, Cardiff ; S. R. Matthews, Middlesex ; W. Mayne, Guy's ; C. A. L. Meredith, Middlesex ; H. L. Milles, King's Coll. ; J. Mintzman and E. F. Morton, Middlesex ; A. H. Musgrove, Guy's ; H. P. Nelson, St. Bart.'s ; C. S. Netscher, St. Mary's ; D. A. Newbery, Guy's ; C. B. Nicholson, Middlesex ; J. R. P. Norman, Birmingham ; C. E. Ogden and R. Okell, St. Bart.'s ; Maud Palmer, Royal Free ; S. C. St. G. C. Parry, Middlesex ; W. E. Parry and P. H. Perkins, London ; R. K. Phillips, Bristol ; N. R. Pooler, St. Mary's ; J. H. Randall, Univ. Coll. ; W. H. G. Reed, King's Coll. ; L. A. Richardson, St. Thomas's ; O. Richardson, St. Bart.'s ; J. H. Ripka, London ; L. Roberts, Middlesex ; G. E. Rowan, St. Thomas's ; E. S. Rudaizky, Guy's ; S. E. Saint, London ; J. W. Schabort, Guy's ; G. Schewel, Westminster ; J. W. Schofield, Middlesex ; J. A. Screech, St. Thomas's ; M. Shlosberg, Manchester ; D. P. Simpson, St. Bart.'s ; J. F. Simpson, St. Mary's ; B. Singh, Leeds ; W. S. Slater, Manchester ; E. V. Slaughter, Middlesex ; Beatrice G. Smith, Univ. Coll. ; C. E. R. Stephenson, St. George's ; Dorothy S. Tait, St. Mary's ; M. Taylor, Charing Cross ; J. G. T. Thomas, St. Mary's ; G. O. Tippett, St. Thomas's ; H. Walden, Leeds ; N. Wassif, Charing Cross ; Janet Welch, Royal Free ; J. G. Wigley, St. Thomas's ; J. I. Williams, Middlesex ; H. Williamson, King's Coll. ; J. Wiseman, Guy's ; H. R. Youngman, St. Thomas's ; A. M. M. Zeiwer, St. George's ; and A. B. Zimbler, Middlesex.

Midwifery.—P. W. A. Agnew, St. George's ; M. T. Aung, Guy's ; J. D. Bailey, St. George's ; G. N. Beeston, Charing Cross ; V. C. Benson, Guy's ; R. H. Bettington, St. Bart.'s ; Hilda M. P. Bond, St. Mary's ; J. D. Borham, Middlesex ; K. J. Box, St. Thomas's ; P. R. Buckton, King's Coll. ; R. H. Burns, London ; C. H. Burridge and A. Byrne-Quinn, St. Thomas's ; C. J. N. Cameron, Univ. Coll. ; Elizabeth J. Carpenter, Royal Free ; Pamela M. G. Churchill, King's Coll. ; J. H. Clapp, London ; Evangeline A. Clark and Enid Clarke, Royal Free ; Violet H. Comber, Univ. Coll. ; F. R. Corfe, St. Bart.'s ; A. R. Cox, Guy's ; Lucy M. Cranage, Royal Free ; G. H. Crisp, St. Bart.'s ; S. D. Dalal, Bombay ; K. E. D. Dauncey, King's Coll. ; T. W. Davies, Cardiff ; H. G. de Silva, Ceylon and Middlesex ; A. C. de Sousa, Middlesex ; C. W. L. De Souza, St. Bart.'s ; G. C. Dewes, St. George's ; Helen L. Dunn, Charing Cross ; Elaine O. H. Earengey, Univ. Coll. ; J. A. Edward, St. Bart.'s ; G. Edwards, St. George's ; D. C. McC. Ettles, Guy's ; J. P. Evans, Charing Cross ; J. C. Fast, Guy's ; C. Fernando, Ceylon ; Alice B. Field, King's Coll. ; R. A. Fitzsimons, Charing Cross ; E. L. Fothergill, St. Thomas's ; Rachel D. Fox, Royal Free ; L. W. Freeman, St. Mary's ; Z. A. Goma, Birmingham ; P. J. Gonsalves, Guy's ; J. A. Gornall, Manchester ; E. C. Grant, Otago ; A. F. W. Hall, Guy's ; R. N. Hall, St. George's ; C. W. Harrison, Los Angeles ; R. A. Haythornthwaite, Westminster ; H. J. Heathcote, St. Bart.'s ; A. H. B. Heesom and C. A. N. Hicks, Guy's ; Catherine E. Hill, Royal Free ; G. G. Hill, London ; T. R. Hill, Guy's ; N. M. Hodivala, Bombay and London ; W. Holdsworth, St. Bart.'s ; H. O. Hopkins, Middlesex ; S. Howard, London ; E. G. Howe, St. Thomas's; J. H. Howells, Cardiff ; M. L. Hutchinson, Guy's ; N. C. Hypher, London ; K. N. Isherwood, Leeds ; J. H. F. Jayasuriya, Middlesex ; Iris A. Jenkin Lloyd, Royal Free ; A. J. Johnson, St. Bart.'s ; E. C. Johnson and Margaret E. Jones, St. Mary's ; J. Kahanas, London ; J. A. Kerr, Birmingham ; W. A. Kerr, King's Coll. ; T. P. Lalonde, Bristol ; Alice B. Laker, Charing Cross ; Mary Langdon-Down, Royal Free ; J. R. E. Lee, Liverpool ; W. Leslie, Guy's ; R. A. V. Lewys-Lloyd, St. Bart.'s ; Edith M. Little, Royal Free ; D. G. Lloyd, London ; Katharine G. Lloyd-Williams and Marjorie Low, Royal Free ; W. S. Maclay, St. Bart.'s ; G. F. H. McCormick, Univ. Coll. ; S. M. Mallick, A. R. Marsh, and C. W. Marshall, Guy's ; W. N. Mascall, St. Thomas's ; A. N. Mathias, St. Mary's ; Bertha I. Meyer, Royal Free ; D.E. J. Mitchell, Manchester ; Mary S. Mitchell, St. Mary's ; J. W. Monro, London ; Anna P. Montgomery, Charing Cross ; M. N. Nicolson, Sheffield ; J. R. P. Norman, Birmingham ; H. P. O'Keeffe, London ; E. N. O'Neill, St. Mary's ; T. C. Pain, Guy's ; B. N. Pajnigar, London ; F. Parker, St. Bart.'s ; W. E. Barry, London ; L. L. P. Paterson, St. Mary's ; Isabel D. Patterson, London ; N. J. Petitmangin, Royal Free ; H. A. Picton, Birmingham ; J. C. C. Poole, St. Bart.'s ; W. G. Porter, Guy's ; Dorothy F. Pratt, Royal Free ; E. N. Price, St. Mary's ; Henrietta Procter, Charing Cross ; E. I. Puddy, St. Mary's ; M. Ragheb, Univ. Coll. ; K. S. Rao, Madras and London ; M. M. Raouf, Cairo ; H. G. S. M. Rees, Cardiff ; D. V. Rice, London ; Hilda M. Richards, Royal Free ; O. Richardson, St. Bart.'s ; N. Rizkalla, Manchester ; K. Roberts, Liverpool ; R. I. Roberts, Manchester ; E. Robinson, E. H. Roche, and E. S. Rudaizky, Guy's ; Audrey E. Russell, Univ. Coll. ; Mona M. Russell-Cruise, St. Mary's ; H. W. Sadlier, St. George's ; S. E. Saint, London ; W. E. Savage, Manchester ; J. W. Schabort, Guy's ; G. Schewel, Hamburg and Westminster ; R. Schofield, Guy's ; Helen D. S. C. Scott, Charing Cross ; Evelyn I. M. Sheppard and H. L. Shimmin, Manchester ; C. W. Simpson, London ; Beatrice G. Smith, Univ. Coll. ; G. H. A. Soysa, Ceylon ; W. E. Snell, Univ. Coll. ; Dorothy E. Stewart, Royal Free ; C. N. Suter, St. Mary's ; A. G. S. Tabb, Charing Cross ; J. W. de W. G. Thornton, King's Coll. ; G. O. Tippett ; St. Thomas's ; H. A. Tracey, St. Bart.'s ; S. D. H. D. Wallis, Guy's ; N. Wassif, Charing Cross ; Edith M. Webb and Gwendolen I. Wilkins, Royal Free ; D. A. J. Williams, G. P. Williams, and J. H. Williams, Cardiff ; L. S. Williams, Guy's ; and Joan Worsfold, Royal Free.

The King has granted to Dr. James Ferguson Lees, C.B.E., lately Director-General of Public Health, Ministry of the Interior, authority to wear the decoration of the Order of Ismail (Insignia of the Second Class) conferred upon him by the King of Egypt, and granted to Dr. Robert Stewart Miller, Director of the Egyptian Hospital for the Insane at El Khanka, authority to wear the Insignia of the Fourth Class of the Order of the Nile, conferred upon him by the King of Egypt.

Royal College of Surgeons of England.—At an ordinary meeting of the Council of the Royal College of Surgeons on Nov. 12th, Sir John Bland-Sutton, President, in the chair, Mr. James Sherren was elected a member of the Committee of Management of the Examining Board in England. The President reported that at a meeting of the Executive Committee of the Streatfeild Research Fund on Oct. 7th Mr. Norman L. Capener, F.R.C.S., was appointed the third Streatfeild Scholar, the subject of his research being the Comparative Anatomy and Function of the Prostate Gland. A letter was read from Mr. Hugh Lett, resigning his membership of the Court of Examiners. The President reported that Mr. C. H. Fagge's term of office on the Court of Examiners would expire on Dec. 9th, and that the vacancy thus occasioned, together with that occasioned by the resignation of Mr. Lett, would be filled up at the ordinary Council on Dec. 10th. Diplomas of Member were conferred upon 204 candidates, whose names were given in The Lancet of Nov. 7th (p. 996).

Close of Consumptive Colony Hospital.—The Cumberland County Council have decided to close the Englethwaite Industrial Colony for the After-care of Consumptives, which last year cost the council £6800.

Society of Medical Officers of Health.—A meeting of the Fever Hospitals Medical Service Group will be held at the Society's House on Nov. 27th, at 3 P.M., when a paper on the Dick Test by Dr. R. A. O'Brien and Dr. C. C. Okell will be read.

King's College Hospital.—The annual report of King's College Hospital, which has just been issued, states that as the result of the recent special appeal, the outstanding liabilities, which were £36,000 at the beginning of the year, have been reduced to less than £15,000. Forty additional beds have been maintained in occupation.

Royal Sanitary Institute.—A sessional meeting of the Institute will be held on Friday, Nov. 27th, at 8 P.M., and on Saturday, Nov. 28th, at 10 A.M., in the Town Hall, Plymouth, when discussions will take place on the Disinfection of Ships, to be opened by Dr. G. A. Borthwick, port medical officer, and Some Points in Public Health Propaganda, to be opened by Dr. A. T. Nankivell, medical officer of health. The chair will be taken at 8 P.M. on Friday by Dr. W. J. Howarth. Those proposing to attend should notify the hon. local secretary, Dr. Nankivell, Plymouth, not later than Nov. 21st.

Messrs. Heffer and Sons, Cambridge, announce that they have in the press a volume by Dr. G. W. Nicholson entitled "The Nature of Tumour Formation: the Erasmus Wilson Lectures, 1925." The object of the lectures is to correlate knowledge of the cellular changes which result in tumour formation with the established facts of biology and physiology. The Oxford Medical Publications, London, are publishing a book by Mr. G. R. Girdlestone, B.M., F.R.C.S., on "The Diagnosis and Treatment of Tuberculosis of the Hip," which is an attempt to show how the objective of "a permanently safe and useful limb" may be reached by the safest and most direct route.

Belfast Maternity Home.—The Duchess of Abercorn last week paid a visit of inspection to the Belfast Maternity Home. In a speech she expressed her amazement that there are only 26 maternity beds to serve the whole Province of Ulster. Dr. R. W. Livingstone, Vice-Chancellor of Queen's University, stated that the conditions in which lectures are given to students at the Maternity Hospital were deplorable, and that the students were gravely handicapped in this branch of their training. He considered that the hospital was worthy neither of Belfast nor its staff, but Prof. J. A. Lindsay, the chairman of the Board of Governors, expressed the opinion that before a remedy was possible there would need to be better public recognition of the work of the hospital.

Crippled Children in Wales.—A meeting of representatives of county and local authorities in North Wales was held at Wrexham on Nov. 6th. The gathering was large and representative, being attended, amongst others, by Dr. D. Llewellyn Williams, chief medical officer of health for Wales, and Mr. Howell James, secretary of the Welsh Department of the Ministry of Health, presided. Sir John Lynn-Thomas urged the need for early treatment of the crippled child by persons specially trained to undertake it, and expressed the hope that provision would be made in the Prince of Wales Hospital, Cardiff, for the training of surgeons in orthopædic surgery. It was decided to form a Welsh branch of the Central Council for the Care of Cripples.

A Pioneer of Open-air Treatment.—A complimentary dinner was given at Shrewsbury on Nov. 7th to Miss Agnes Hunt, the founder of the Baschurch Surgical Home, which has now developed into the Shropshire Orthopædic Hospital. Among those present were Mr. W. C. Bridgeman, First Lord of the Admiralty, presiding, and many distinguished surgeons. Sir Robert Jones said Miss Hunt's methods, once described as visionary, were being imitated all over the world, not only in open-air treatment, but also in the establishment of after-care centres. Sir William Wheeler described Miss Hunt as the Florence Nightingale of the crippled children's world—"her lamp was the sun." At Baschurch, in 1900, half a dozen children were accommodated in an improvised shed in a garden, and now the institution, which took over the old war hospital at Park Hall, Oswestry, in 1920, accommodated some 340 patients from all parts of the country. Lord Kenyon presented Miss Hunt with a cheque for 1000 guineas and an illuminated album. There were over 500 subscribers to the testimonial—a gift of gratitude for 25 years' service for humanity whereby many thousands, apparently doomed to cripplehood, had been restored to strength and vigour.

Manchester: North-Western Tuberculosis Society.—A meeting of this society will be held on Nov. 26th at the Tuberculosis Offices, Joddrell-street, Deansgate, Manchester, when Dr. G. E. Loveday will read a paper on Vaccine-therapy with Special Reference to Tuberculosis.

Irish Medical Schools and Graduates' Association.—The autumn dinner of this Association will take place at Pagani's Restaurant, Great Portland-street, London, W., on Wednesday, Nov. 25th, at 7.30. Tickets may be obtained from Dr. J. F. Peart, 5, Harley-street, W. 1. The guest of the evening will be the Right Hon. Charles Andrew O'Connor, P.C.

French Medical Cruises, 1926.—The Compagnie des Messageries Maritimes have again organised two special cruises to the Mediterranean for members of the medical profession, to leave Marseilles on March 9th and April 21st, 1926, respectively, each tour occupying 30 days. Full particulars of these special cruises, as well as of other tours, can be obtained at the London offices of the company, 72–75, Fenchurch-street, E.C. 3, and 62, Pall Mall, S.W. 1.

Portmadoc Hospital.—This war memorial, established six years ago, has proved so useful that it has been decided to add new buildings. A site has been presented free by Dr. Richard Griffith, J.P., of Portmadoc. Donations of £200 have been received from Mr. J. E. Greaves, Lord-Lieutenant of Carnarvonshire, and £100 each from Mr. R. M. Greaves and Mrs. Charles Breese.

Bristol Hospitals Contributory Scheme.—Last year the total deficit on the working of the six Bristol hospitals was approximately £30,000. It has therefore been decided to establish a contributory scheme, and it is hoped to make arrangements with the participating institutions whereby persons with incomes exceeding £300 may, on payment in advance of £1 per annum, join a central association and receive the same benefits as the ordinary contributor.

Hospitals and Motoring Accidents.—At the anniversary meeting of governors of Nottingham General Hospital, Mr. James Forman, the President, pointed out that motor-car accidents represented 25 per cent. of the total casualty cases. He added that if there were as many admissions of victims of motor accidents in proportion during the next 12 months as there have been during the last eight, 2200 bed days would be occupied by them, and that there would be 190 patients in this category.

Royal Northern Hospital, London.—In aid of the hospital a fancy dress ball was held in the Royal Albert Hall on Nov. 12th. The date originally fixed was Armistice night, Nov. 11th, but this was subsequently changed to the following night. The ball, which was under the chairmanship of the Duchess of Sutherland, was a brilliant spectacle, the chief guest being H.R.H. the Prince of Wales. The extent to which the hospital benefited financially from this function will be announced later.

Royal Medical Benevolent Fund.—The treasurer (Sir Charters Symonds, 11, Chandos-street, W. 1) appeals for £350 to enable the committee to distribute to the annuitants and some of the most necessitous grantees a Christmas gift of 25s. Last year the remnant of the Dinner Fund (raised in 1913) was used for this purpose, and though subscriptions are coming in satisfactorily, the exhaustion of this "nest-egg" makes it difficult to meet this extra expenditure.

Dublin: National Maternity Hospital.—At the annual meeting of the National Maternity Hospital held last week it was reported that 871 patients had been admitted to the maternity wards during the year, and 402 to the gynæcological wards. In addition, 710 patients were attended at their own homes. It has been found impossible for the hospital to carry on its work without extension, and a site for extension has been obtained by the purchase of several adjoining houses. A sum of at least £10,000 will be necessary, however, before building can be undertaken. An appeal is now made for this sum.

Plymouth Medical Society.—At a recent meeting of this society the following officers were elected for the session 1925–26:—President, Mr. Gerald Robinson; vice-presidents, Mr. C. L. Lander and Dr. Colin Lindsey; hon. treasurer, Mr. J. Elliott Square; hon. librarian, Mr. H. Guy Ludolf; hon. secretaries, Mr. Cecil B. F. Tivy and Mr. James Riddel. Members of Council: Dr. R. J. Percy Thomas, Mr. H. F. Vellacott, Dr. T. M. Jamieson, Dr. A. Bertram Soltau, Dr. Eric Wordley, and Dr. R. H. Wagner. The library and rooms of the society are at Beaumont House, Plymouth.

Dr. John Divine, J.P., barrister-at-law, has been appointed coroner for Hull.

HOSPITAL OF ST. JOHN AND ST. ELIZABETH.—The new operating theatre, isolation ward, and X ray department at the Hospital of St. John and St. Elizabeth, Grove End-road, were formally opened last month by Cardinal Bourne. The theatre wing contains the operating theatre, a nurses' room, a large anæsthetic room (which is also used for minor operations), a wash-up room, a surgeons' disrobing room, a surgeons' dressing room with shower bath attached, and a store room; all the rooms lead off from a broad central hall. One of the features of the operating theatre is the apparatus for hot and cold sterile water and saline solution, which is fixed in the sterilising room and has pipes carried through the wall into the theatre. The theatre, one of the most up to date in England, has been built and equipped through the generosity of Mrs. H. G. Tetley, in memory of her late husband, Henry Greenwood Tetley. The architect is Mr. Keith Young, and the total cost of building and equipping was about £10,000. Mrs. Tetley has also endowed two private rooms in the hospital so that the board of management are able to receive, at an inclusive fee of £2 10*s.* weekly, patients whose circumstances do not admit their paying ordinary fees charged for private rooms. The isolation ward was erected through the generosity of Miss Winifred Berthe de La Chere. The X ray department, which was recently built by subscriptions collected by the chairman, Sir Charles Russell, is fitted with the latest appliances, and has photographic, treatment, and developing rooms. At the opening ceremony Mrs. Tetley and Miss de La Chere were presented with inscribed keys, and a reception was held in the hospital afterwards. Amongst those present were Viscount Fitzalan of Derwent (president of the hospital), Adele, Countess Cadogan, and the members of the board and honorary staff.

Parliamentary Intelligence.

HOUSE OF COMMONS.

MONDAY, NOV. 16TH.

PARLIAMENT reassembled after the summer recess.

Medical Enlistment for the Services.

Colonel DAY asked the Secretary of State for War whether any agreement had yet been reached with the British Medical Association in regard to their action affecting the enlistment of medical men into the Royal Army Medical Corps.—Sir L. WORTHINGTON EVANS replied: The pay and conditions of service of medical officers in the Navy, Army, and Air Force are being examined by an Inter-Departmental Committee appointed by the Government. The Committee has authority to take evidence from outside the Government service, and will, I understand, obtain the views of the British Medical Association on the subject.

Penal Reform.

Colonel DAY asked the Home Secretary whether the International Prison Commission, held in London during August, made any recommendation as to penal reform; and, if so, what recommendations were likely to be carried into effect.—Sir W. JOYNSON-HICKS replied: The proceedings of the Congress and the resulting resolutions will, it is hoped, be published shortly by the Secretary-General, Prof. Dr. Simon van der Aa, K.B.E., of Holland, when they will receive my careful consideration.

Progress in Housing.

Captain BOWYER asked the Minister of Health how many houses had been sanctioned, were being built, and had been completed under the Housing Acts of 1923 and of 1924 respectively.—Sir KINGSLEY WOOD (Parliamentary Secretary to the Ministry of Health) replied: On Nov. 1st the position under the Housing Acts of 1923 and 1924 was as follows:—

	Act of 1923.	Act of 1924.
No. of houses completed ..	116,811	15,122
No. of houses under construction	42,601	30,956
No. of houses definitely arranged for but not started	29,840	24,046
No. of houses authorised but not definitely arranged for ..	49,036	20,202
Totals (No. of houses authorised)	238,288	90,326

TUESDAY, NOV. 17TH.

Use of Insulin in Scotland.

The House considered the Public Health (Scotland) Amendment Bill on report. This measure authorises local authorities under the Scottish Public Health Act of 1897 to make arrangements for providing medicines and treatment to persons suffering from diabetes.

Dr. SHIELS moved, at the end of Clause I., which is the operative clause, an amendment providing that the Scottish Board of Health should require the local authority to arrange that any medicine used for the treatment of persons suffering from diabetes and who, in the opinion of the local authority, required assistance in obtaining such medicines and treatment, should be dispensed by a registered pharmacist, or by a registered medical officer or practitioner. He said insulin ought to be distributed under medical supervision. That precaution, he said, was already taken by the Poor-law authorities and under the National Health Insurance Acts. He did not see why the poor people who were to receive the insulin under this Bill should not have the same definite safeguards as others. Insulin was a very dangerous drug and unless it was distributed with care the results might be very serious.

Sir J. GILMOUR (Secretary for Scotland) said he was unable to accept the amendment. They all wished to see that the greatest safeguards were observed in the use of this drug. It was manufactured in bulk and sold in closed capsules. It was prescribed by a doctor, and at a certain stage of the treatment it might under careful medical directions be administered by the patient. So far as its purity was concerned it did not matter whether it was handed by the local chemist over the counter or dispensed by the local authority at their clinic. It could not be said that the risk of its being mishandled was any greater under the Bill than in the way proposed by the amendment. They were desirous that the Scottish Board of Health, working through the local authorities, should be able to dispense insulin at a price which would bear a fair comparison with that at which it could be obtained from a chemist's shop. The chemist would, of course, have to make a certain profit.

Sir A. SINCLAIR asked if there was any risk of deterioration in capsules and had not chemists previously been able to detect this fact and had they not rejected some of the supplies?

Sir J. GILMOUR said deterioration of the drug could not be detected by the local chemist.

Mr. WESTWOOD asked for a guarantee that only those persons properly qualified under the Pharmacy Acts should be allowed to manufacture insulin.

Sir J. GILMOUR said that he appreciated very much the natural and proper desire of Members to see that every precaution was taken in regard to the manufacture of this drug. He could give a guarantee that it was manufactured directly under the supervision of the Medical Advisory Council. So far as the handling and manufacture were concerned that was done by properly qualified people. The Bill dealt not with the manufacture but the distribution of the drug, and that was done in glass capsules so that the drug was properly protected.

Dr. SHIELS's amendment was rejected without a division.

On the motion for the third reading of the Bill,

Mr. W. ADAMSON said that although the Labour Party supported the Bill, they regretted that it was limited in its scope. The measure should have been extended to other diseases so as to bring the administration of public health in Scotland into line with England. An effective remedy might be found for cancer at any moment. It would be a tragedy if the poor people of Scotland could not get such remedy because of its costly nature.

Sir J. GILMOUR said that he appreciated the support of the Opposition in regard to this Bill. The problem of cancer, about which they were all anxiously waiting for a solution, was of such magnitude and so important that, in their judgment, it should be dealt with when it arose. No one could visualise either what the nature of the solution or the cost might be. In those circumstances they felt very strongly that if and when that solution was found there could be no reasonable doubt in the minds of anyone that Parliament would deal with it adequately and properly.

The Bill was read a third time, and passed.

Appointments.

COYTE, RALPH, M.B., B.S. Lond., F.R.C.S. Eng., has been appointed Assistant Surgeon to the Queen's Hospital for Children, Hackney-road, E.

GALLOWAY, R. L., M.B., F.R.C.S. Edin., Assistant Surgeon, North Middlesex Hospital, Edmonton.

HUTT, C. W., M.D. Camb., D.P.H. Oxf., Lecturer in Hygiene and Public Health, Charing Cross Hospital Medical School.

LINDEBERG, E. W., M.B., Ch.B. Glasg., Certifying Surgeon under the Factory and Workshop Acts for the Friockheim District of the County of Forfar.

PUGMIRE, GERTRUDE E., M.R.C.S., L.R.C.P. Lond., Surgeon, North Dispensary, Vauxhall-road, Liverpool.

St. Thomas's Hospital: Tompson, B. E., M.B., B.Ch. Oxon., Thomson, G. W. R., M.R.C.S., L.R.C.P. Lond., Rees, W. E., M.B., B.S. Lond., de Jersey, G. W. S., M.R.C.S., L.R.C.P. Lond., Wrigley, A. J., M.B., B.S. Lond., Barrett, J. C., V.C., M.B., B.S. Lond., Crawford, D. P., M.R.C.S., L.R.C.P. Lond., Dobie, J. M., M.B., B.Ch. Cantab., Casualty Officers and Resident Anæsthetists; Archer, E. C., M.R.C.S., L.R.C.P. Lond., Sims, T. H., M.B., B.Ch. Cantab., Rea, R. H. T., M.B., B.Ch. Cantab., Alexander, R. D., M.B., B.Ch. Cantab., Resident House Physicians; Cooke, A. M., M.B., B.Ch. Oxon., Resident House Physician for Children; Marks, D. P., M.B., B.Ch. Cantab., Boggon, R.H., M.R.C.S., L.R.C.P. Lond., Robinson, A. B., M.R.C.S., L.R.C.P. Lond., Battson, A. A., M.B., B.S. Lond., Resident House Surgeons; Wiener, R. A. K., M.R.C.S., L.R.C.P. Lond., Resident Orthopædic House Surgeon; Nicholson, H. W., B.A. Cantab., M.R.C.S., L.R.C.P. Lond., Resident House Surgeon (Ear); Rees, D. I., M.R.C.S., L.R.C.P. Lond., Resident House Surgeon (Throat); Robinson, J. J. R., M.B., B.S. Lond., Senior Obstetric House Physician; Heath, W. E., M.R.C.S., L.R.C.P. Lond., Junior Obstetric House Physician; Saunders, K. G. W., M.R.C.S., L.R.C.P. Lond., Senior Ophthalmic House Surgeon; Coverdale, H. V., M.B., B.Ch. Cantab., Junior Ophthalmic House Surgeon; Neilson, D. F. A., F.R.C.S. Eng., Amesur, C. A., M.R.C.S., L.R.C.P. Lond., Haward, F. C., M.R.C.S., L.R.C.P. Lond., Barron, H. T., M.D. Lond., Sellick, R., M.R.C.S., L.R.C.P. Lond., Sworn, B. R., M.R.C.S., L.R.C.P. Lond., Marriner, H. I., F.R.C.S. Edin., Grey J. C. P., M.R.C.S., L.R.C.P. Lond., Walford, A. S. H., M.B., B.Ch. Cantab., Lloyd-Williams, P., M.R.C.S., L.R.C.P. Lond., L.D.S., Miller, A. K., M.R.C.S., L.R.C.P. Lond., Miller, N. A., M.R.C.S., L.R.C.P. Lond., Shires, B., M.B., Ch.B. Edin., Rickman, J., M.B., B.Ch. Cantab., Brockman, E. P., M.B., F.R.C.S. Eng., Gillam, J. F. E., M.R.C.S., L.R.C.P. Lond., Amies, C. R., M.R.C.S., L.R.C.P. Lond., Plum, D., M.R.C.S., L.R.C.P., Milford, R. D., M.R.C.S., L.R.C.P. Lond., Walter, A. G., M.R.C.S., L.R.C.P. Lond., Chiesman, W. E., M.B., B.Ch. Cantab., Alston, R. B., M.R.C.S., L.R.C.P. Lond., Edwards, J. L., M.B., B.Ch. Cantab., Gibbens, J. H., M.R.C.S., L.R.C.P. Lond., Belilios, A. D., M.R.C.S., L.R.C.P. Lond., Thornton, F. S., M.R.C.S., L.R.C.P. Lond., Chief Assistants and Clinical Assistants.

Vacancies.

For further information refer to the advertisement columns.

Birmingham City Education Committee.—Asst. Sch. M.O. £600.

Birmingham, Selly Oak Hospital.—Res. Jun. Asst. M.O. £300.

Bradford Royal Eye and Ear Hospital.—Res. H.S. £120.

Bristol General Hospital.—Hon. Clin. Assts.

Cambridge, Addenbrooke's Hospital.—H.S. £130.

Cambridge, Mental Hospital.—Med. Supt. £800.

Cancer Hospital, Fulham-road, S.W.—Surg. Reg.

Cardiff City Mental Hospital, Whitchurch, near Cardiff.—Locum Tenens. 7½ guineas weekly.

Cardiff, King Edward VII. Welsh National Memorial Association.—Asst. Tub. O. £600.

Cardiff, Welsh National School of Medicine.—Lecturer in Pathology and Bacteriology. £750.

Central London Throat, Nose, and Ear Hospital, Gray's Inn-road, W.C.—Res. H.S. £75.

Chelsea Hospital for Women, Arthur-street, S.W.—Jun. H.S. At rate of £100. Also Dental S.

Corporation of London Public Health Department.—Sanitary Inspector. £238 15*s.* 6*d.*

East London Hospital for Children and Dispensary for Women, Shadwell, E.—Asst. P. £50.

General Lying-in Hospital, York-road, Lambeth, S.E.—Res. M.O. At rate of £100.

Hospital for Sick Children, Great Ormond-street, W.C.—H.S. and H.P. Each at rate of £50.

Hove Hospital, Sackville-road.—Res. M.O. £175.

Iraq Health Department.—Two M.O.'s. Rs.1200.

Italian Hospital, Queen-square, W.C.—Hon. Radiographer.

Liverpool, Hospital for Consumption and Diseases of Chest, Mount Pleasant.—Asst. M.O. and Pathologist. £150.

London Royal Free Hospital, School of Medicine for Women, 8, Hunter-street, W.C.—Sen. Second and Third Assts. for Obstetrical and Gynæcological Unit. £350 to £500. Also Res. Asst. Pathologist. £125.

Maidstone, West Kent General Hospital.—H.S. £220.

Manchester, Ancoats Hospital.—H.S. At rate of £100.

Manchester City Education Committee.—Asst. Sch. M.O. £600.

Manchester, Northern Hospital for Women and Children.—Sen. H.S. and Jun. H.S. £130 and £100 respectively.

Margate, Royal Sea Bathing Hospital.—H.S. At rate of £200.

Metropolitan Asylums Board.—Appointments in Tuberculosis Service. Sen. Asst. M.O.'s. £650. Jun. Asst. M.O.'s. £500.

Metropolitan Hospital, Kingsland-road, E.—Pathologist.

Mildmay Mission Hospital, Austin-street, Bethnal Green, E.—Sen. Res. M.O. and Jun. Res. M.O. £140 and £100 respectively.

Newcastle-upon-Tyne, Royal Victoria Infirmary.—Two Jun. Non. Res. H.S.'s. At rate of £100.

Northamptonshire County Council.—M.O.H. and Sch. M.O. £1100.

Prince of Wales's General Hospital, Tottenham, N.—Clin. Assts.

Prison Medical Service.—M.O. £495.

Queen's Hospital for Children, Hackney-road, Bethnal Green, E.—H.P. At rate of £100.

Rochester, St. Bartholomew's Hospital.—Res. Surg. O. At rate of £250.

Royal Northern Hospital, Holloway, N.—Clin. Assts.

St. George's Hospital, S.W.—S. and Asst. S.

Salford Royal Hospital.—Res. Surg. O. £200.

Sheffield, Jessop Hospital for Women.—Asst. H.S. At rate of £100.

Singapore, College of Medicine.—Prof. of Biochemistry and Prof. of Biology. Each $850–$1000.

South Shields County Borough.—Ven. Dis. M.O. £750.

University College Hospital, Gower-street, W.C.—Med. Reg. £150. Also Hon. Dental S.

West Middlesex Hospital, Isleworth.—Asst. Med. Supt. £250.

Willesden General Hospital, Harlesden-road, N.W.—Hon. P.

York County Hospital.—H.P. £150.

The Chief Inspector of Factories, Home Office, London, S.W., announces a vacant appointment for a Certifying Factory Surgeon at Peterhead, Aberdeenshire.

Births, Marriages, and Deaths.

BIRTHS.

Aikman.—On Nov. 12th, at Westwood, Beaconsfield, the wife of Kenneth Blackie Aikman, M.D., of a daughter.

Cocking.—On Nov. 15th, at Strada Mezzodi, Valetta, Malta, the wife of Surgeon-Lieutenant-Commander A. Wilkinson Cocking, R.N., of a son.

Whitfield.—On Oct. 16th, at Trimulgherry, India, the wife of Captain C. A. Whitfield, R.A.M.C., of a daughter.

MARRIAGES.

Thomas—Last.—On Nov. 3rd, at St. Mary's, Bryanston-square, John Oscar Thomas, *M.C.*, M.D., M.R.C.P., to Dorothy Mary, daughter of Mr. and Mrs. Last, of Roselands, Clacton-on-Sea.

DEATHS.

Bardsley.—On Nov. 12th, Percy Crofts Bardsley, M.B., B.C. Camb., aged 59.

Blundell.—On Nov. 10th, at Holcombe, House, West Worthing, Hight Blundell, M.D., aged 61 years.

Gervis.—On Nov. 11th, at Belsize-park, N.W., Arthur Frederick Gervis, M.R.C.S., L.R.C.P. Lond.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Medical Diary.

Information to be included in this column should reach u in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

Monday, Nov. 23rd.

ODONTOLOGY: at 8 P.M.
Casual Communication:
Mr. G. B. Pritchard: A Case of Exposure of the Pulp of Uncertain Origin.
Paper:
Mr. Harold G. Watkin: The Evolution of Radiography.

Tuesday, Nov. 24th.

Library: The Library will be open until 10 P.M.

MEDICINE: at 5.30 P.M.
Discussion on
The Clinical Aspects, Treatment, and Prognosis of Nephritis.
To be opened by Prof. Hugh MacLean.

Wednesday, Nov. 25th.

COMPARATIVE MEDICINE: at 5 P.M.
Paper:
Dr. Carey F. Coombs, Dr. Hadfield, and Mr. G. E. Henson: A Note on the Endocarditis of Swine Erysipelas and its Relation to Endocardial Lesions in Man.

Thursday, Nov. 26th.

BALNEOLOGY AND CLIMATOLOGY: at 5 P.M.
Presidential Address:
Dr. Llewellyn J. Llewellyn on Diathesis.

UROLOGY: at 8.30 P.M.
Clinical and Pathological Evening.

Friday, Nov. 27th.

Library: The Library will be open until 10 P.M.

BALNEOLOGY AND CLIMATOLOGY: at 10 A.M.
Joint Meeting with the International Society of Medical Hydrology to discuss The Treatment of Rheumatism in Industry.
The President of the International Society of Medical Hydrology (Dr. Gustave Monod, of Vichy) will occupy the chair, and the following are expected to take part in the discussion:
Sir George Newman, K.C.B., Chief Medical Officer to the British Ministry of Health; Dr. Van Breemen (Holland); Dr. Kerr Pringle (Harrogate); Dr. Otto May (London); Dr. Buckley (Buxton); Dr. Jansen (Denmark); Dr. Louis Blanc (France); Dr. Schmidt (Czechoslovakia); Dr. L. J. Llewellyn (London); Dr. M. B. Ray (London); Dr. Fortescue Fox (London); and others.

STUDY OF DISEASE IN CHILDREN: at 8.30 P.M.
Discussion on
The Diagnosis and Treatment of Splenic Enlargements in Children.
To be opened by Sir Humphry Rolleston, and continued by Dr. G. A. Sutherland, Mr. Arthur Edmunds, Dr. L. G. Parsons (Birmingham), and Dr. Hugh Thursfield.

EPIDEMIOLOGY AND STATE MEDICINE: at 8 P.M.
Paper:
Dr. A. K. Chalmers: National Death-rates in Relation to National Differences in Housing.

MEDICAL SOCIETY OF LONDON, 11, Chandos-street, Cavendish-square, W.
MONDAY, Nov. 23rd.—8 P.M., Clinical Evening: Exhibition of Cases and Skiagrams.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W.
MONDAY, Nov. 23rd, to SATURDAY, Nov. 28th.—Fellowship of Medicine lecture, Medical Society, 11, Chandos-street, W. Mon., 5.30 P.M., Mr. G. R. Girdlestone: Tuberculosis of the Spine.—LONDON LOCK HOSPITAL, Dean-street, W. Instruction daily in the Out-Patient Department and lectures.—LONDON TEMPERANCE HOSPITAL, Hampstead-road, N.W. General Practitioners' Course, 4.30 to 6 P.M.—ROYAL WATERLOO HOSPITAL, Waterloo-road, S.E. Special Course in Medicine, Surgery, and Gynæcology. Lectures, demonstrations will be given in the Out-patient Department and Wards.—WEST END HOSPITAL FOR NERVOUS DISEASES, Welbeck-street, W. Lecture-demonstrations illustrated by cases, daily at 5 P.M.

NATIONAL HOSPITAL FOR THE PARALYSED AND EPILEPTIC, Queen-square, Bloomsbury, W.C. 1.
POST-GRADUATE COURSE: OCTOBER-NOVEMBER, 1925.
CLINICAL LECTURES AND DEMONSTRATIONS.
MONDAY, Nov. 23rd.—2 P.M., Out-patient Clinic: Dr. Hinds Howell. 3.30 P.M., Alterations in the Visual Fields: Mr. Williamson-Noble.
TUESDAY, Nov. 24th.—2 P.M., Out-patient Clinic: Dr. Walshe. 3.30 P.M., Neurosyphilis: Dr. Hinds Howell.
THURSDAY, Nov. 26th.—2 P.M., Out-patient Clinic: Dr. Kinnier Wilson. 3.30 P.M., Methods of Testing the Eighth Nerve (in the Out-patient Department): Mr. Just.
FRIDAY, Nov. 27th.—2 P.M., Out-patient Clinic: Dr. Adie. 3.30 P.M., Cerebral Diplegia: Dr. Collier.
COURSE OF LECTURES AND DEMONSTRATIONS ON THE PATHOLOGY OF THE NERVOUS SYSTEM.
THURSDAY, Nov. 26th.—12 noon, Syphilis of Nervous System: Dr. J. G. Greenfield.
COURSE OF LECTURES AND DEMONSTRATIONS ON THE ANATOMY AND PHYSIOLOGY OF THE NERVOUS SYSTEM.
MONDAY, Nov. 23rd.—12 noon, The Autonomic System, (*b*) The Growth of the Mind: Dr. J. L. Birley.
Dr. H. J. Macbride is giving a COURSE OF EIGHT CLINICAL DEMONSTRATIONS, chiefly on METHODS OF EXAMINATION OF THE NERVOUS SYSTEM, in the Wards at 10 A.M. on Tuesdays and Fridays.
Mr. Armour and Mr. Sargent operate at the Hospital on Tuesday and Friday mornings at 9 A.M. or at such other times as may be announced.
J. G. GREENFIELD, Dean of Medical School.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N.
THURSDAY, Nov. 26th.—3 P.M., Mr. T. H. C. Benians: The Investigation of Obscure Febrile Conditions. 4.30 P.M., Dr. F. G. Crookshank: Colon Bacillus Septicæmia.
Daily: In-patient and Out-patient Clinics in General and Special Departments, Operations, &c.

CENTRAL LONDON THROAT, NOSE, AND EAR HOSPITAL, Gray's Inn-road, W.C.
FRIDAY, Nov. 27th.—4 P.M., Mr. Nicol Rankin: Ear Ache.

LONDON SCHOOL OF DERMATOLOGY, St. John's Hospital, 49, Leicester-square, W.C.
TUESDAY, Nov. 24th.—5 P.M., Dr. A. Whitfield: Diseases Due to Fungi (2).
THURSDAY.—5 P.M., Dr. A. M. H. Gray: Bacterial Affections.

MANCHESTER ROYAL INFIRMARY POST-GRADUATE COURSE.
TUESDAY, Nov. 24th.—4.15 P.M., Dr. T. H. Oliver: Functions of the Pituitary Gland.
FRIDAY.—4.15 P.M., Prof. J. Shaw Dunn: Recent Work on Renal Function.

JAMES MACKENZIE INSTITUTE FOR CLINICAL RESEARCH, ST. ANDREWS.
TUESDAY, Nov. 24th.—4 P.M., Dr. I. McKenzie: Insulin in the Treatment of Toxic Delirium.
THURSDAY.—5 P.M., Mr. Lane Roberts: Conditions Leading to Obstructed Labour.

ROYAL INSTITUTE OF PUBLIC HEALTH, 57, Russell-square, W.C.
WEDNESDAY, Nov. 25th.—4 P.M., Dr. W. M. Willoughby: Infection in Ships and the Prevention of Spread Therefrom.

CHADWICK PUBLIC LECTURES.
THURSDAY, Nov. 26th.—8 P.M. (in the Lecture Hall, Royal Institute of British Architects), 9, Conduit-street, W., Mr. A. Macmorran, K.C.: Sanitary Provisions of the New Public Health Act, 1925.

Notes, Comments, and Abstracts.

THE DEVELOPMENT OF SPEECH IN THE NORMAL CHILD.

IN an address to the Child Study Society, on Nov. 12th, Mr. Macleod Yearsley described the results of his study of the development of speech in his son. Too little attention has been given, he considers, to normal development, which is necessarily the basis of all attempts to build up speech in abnormal children. The literature of the subject, he states, is very meagre, and has received no very notable additions save the fourth chapter of Wylie's "Disorders of Speech" since the appearance of Preyer's "Mind of the Child" in 1890. After summarising previous observations Mr. Yearsley gave an account of his own.

The first methods of communication are laughing, crying, and grunting, with facial expression and gesticulation. These precede, and are concurrent with, the development of speech, towards which the first steps are automatic exercises of the speech organs such as babbling, crowing, mimic reading, and echolalia. Automatic unconscious babbling may be compared to kicking and movements of the arms, and begins very early. The sounds *a-a-ah*, *e-e-e* and *oo-eh* were present on the third day and *laa-laa* on the fourth. On the twenty-fourth a nasal consonantal sound *na-na* was noted, and by the seventieth day the following sounds were heard:—*Aah*, *aah-boo*, *aah-goo*; *boo*, *boo-ah*; *goo*, *goo-ah*, *gur-gur-rll*; *tloo*, *l-loo-oo*, *lloo-loo*; *maa*; *naa*; *ooh*, *o-ur*, *oo-mum*, *oo-laa*, and "something beginning with a D." Crowing occurred on the seventieth day, and mimic reading about the thirteenth month. The place of babbling is gradually usurped by echolalia—i.e., unintelligent parrot repetition of adult speech, and this is important as a preliminary exercise. There were distinct traces of echolalia as early as the seventy-sixth day, when the boy often repeated his own name without the least intelligent application. On the 182nd day this, and the imitation of other sounds, was well marked. The sound of a watch excited him to *tick-tick-tick*, and on the 364th day he made the same noise when shown the picture of a watch. Sounds repeated easily by echolalia may give difficulty when intelligent speech is developed later. Wylie states that "the first efforts of intelligent speech call into action the higher and more conscious functions of the cerebrum, which as yet have had little or no concern with the process of articulation. Everything goes to show that the higher centres can learn their own duties with regard to speech and train the lower centres to prompt and perfect obedience only after a period of persevering effort." The boy frequently repeated *Loo-ey* by echolalia, but later had difficulty with his *l's*, and called himself 'Ouis. The letter *y* was frequently substituted for *l* as in "yadies" and "yetters." Understanding of spoken words comes before speech. Preyer's child, however, did not develop an ability to discriminate words heard until the twelfth month. On the 117th day Louis could clearly recognise "bottle," "up," "daddy," and "mummy." On the 253rd day he associated "dad-dad" with his father and "Peter Pan" with a picture; ten days later he waved his hand and arm of his own volition on hearing "Ta-ta," and on the 290th day said "Nan-nan-nan" to his nurse. The 333rd day was noteworthy because he said "daddy" when his father entered; he remarked "bath" when the article arrived on the 362nd day, and at 1 year 27 days he correctly answered the time-honoured questions about the peculiar utterances of cows and dogs with the words "moo" and "bow-wow." Three days later, when he was told that his father was about to take a bath, he said "dad-dad ba-baa." At 1 year 35 days he noticed a dog on his own initiative and said "woo-woo," and at 1 year 96 days began to ask the names of things by pointing to them and saying "*Er?*" At 1 year 116 days he remarked, "Fire," on seeing a stove, and replied "Ba!" on being asked where he was going; and at 1 year 136 days he visited the Zoo and called the lions *woo-woos* (a name appropriate to dogs), referred to a bear as "Be'r" (he possessed a teddy-bear), and imitated the sea-lions!

Another phase in the normal development of intelligent speech is the invention of words. Preyer's boy said *Momm* at 10 weeks, and subsequently whenever he was hungry. Romanes records the case of twin boys who invented a language and could not be induced to speak anything else for several years; they understood each other perfectly. Usually the words are partly onomatopoeic. Louis invented only four, namely, *A-wah-wah*=a horse (1 year 168 days, changed 15 days later to *Ah-vah*); *Fuf-fuf*=a motor vehicle, *woo-woo*=a dog, and (1 year 300 days) *num-nums*=grapes, apparently derived from *neum-neum*, which was a sign of pleasure on eating. At 18 months Louis had a vocabulary of 36 words, to which he added 15 by 19 months. At 21 months he had about 200 words, and at 2 years he had over 400. The first question was asked at 2 years 1 month, when he picked up a tie and said "What is that?" He has never ceased to ask questions since. The first answer was at 1 year 6 months, when he replied "A bear," and at 2 years 2 months he said, "No, I haven't." The first personal pronoun was used at 1 year and 5 months, when he remarked, "*My* daddy," and he said, "I want Nannie" at 1 year 10 months. The first personal pronoun, suggesting a realisation of personality, has been in continuous use since then, and 11 days after its first employment he used the second in "Oo want to go tatas too?" Sentences began at about 1 year 9 months, with such remarks as "Mummy cut it," and "Slide—hair—mummy's —broken—mend it." At 1 year 8 months he said (appropriately), "Roof — high — man — door—key—hole," which was an early step in speech production as it consisted of nouns only. At 2 years 7 months, on looking at a picture, he said, "Look at all those boats. There's one with smoke coming out of it. There's one with sails on it. There's one with a flag on it." A month later he expressed causality by saying, "When you get a lot of 'buses and taxis it makes *traffic*." At 2 years 11 months he was heard to murmur to himself, "Old Mother Goose, when she wanted to wander, didn't ride in a taxi or a 'bus. Oh, no! but she rode on the back of a very fine gander." At the same age he told his first story—on somewhat conventional lines—and developed an interest in puns. He said for instance, "That's a Russian engine—rushin' along," and "Is Brighton bright?"

The first three years of life may perhaps be apportioned as follows, always remembering that there is a certain amount of overlapping. The first year is spent in methods of communication which are part animal and part primitive human. These methods serve as a scaffolding beneath which articulate speech is built up. The second year is devoted to acquiring and experimenting with a vocabulary, and the third is occupied in perfecting and correcting. These three stages seem to recapitulate in brief the development of speech in the human race. The first year represents the long night of animal and pithecoid ancestry; the second the period of pleiocene or eolithic man, and the third represents the period of astonishingly rapid development from pleistocene or palæolithic man to the period of history. The marked difficulty of pronouncing words intelligently which came glibly with echolalia has been mentioned. It may be tentatively suggested that babbling and echolalia represent the earlier stages of proto-speech which made its mark on the organism very deeply, and is therefore more easily reproduced automatically in the young. Comparison of the speed at which speech was acquired by Louis and other contemporaries with the children's progress recorded by Wylie and Preyer shows a relative (and not undesirable) precocity in the modern child. Perhaps this may be explained by the fact that nowadays parents take a greater personal interest in their children.

THE TECHNIQUE OF THE ARTIST.

ANY attempt to grasp the technique of another art is a pleasant relaxation from the sometimes wearisome practice of one's own. Few medical men have leisure to attend any of the many series of critical lectures delivered by Mr. Stewart Dick at the National Gallery. Many will be grateful for their issue, suitably modified, in the form of a little handbook entitled "Hours in the National Gallery" (London: Duckworth, pp. 144, 3*s.* 6*d.*), to which Sir Charles Holmes has contributed an introduction. The volume is of convenient pocket size, and will help visitors to this and other galleries to keener appreciation of those differences in period, school, and manner that any collection rich in classical pictures has to offer.

CUTANEOUS PROTEIN TESTS.

IN a handbook entitled "Biological Therapy," Messrs. Parke, Davis and Co. have recently described the means of testing susceptibility to various specific proteins. The original material is extracted with water or physiological saline, to which a small quantity of a non-irritating preservative has been added. After the addition of glycerine it is concentrated and mixed with boric acid powder in sufficient quantity to make a rather stiff paste. It is claimed that the necessary activity and stability are thus obtained, and a small portion of each paste to be tested can be applied to as many as 25 small scarified areas on the arm without discomfort. A control reaction is observed, and a positive result is indicated within 30 minutes by the development of a definite weal not less than half a centimetre in diameter. For no apparent reason a test may be positive to-day and negative to-morrow, so that failure to get a reaction does not necessarily mean an absence of supersensitiveness, though it is doubtless accepted as such by the majority of observers. On the other hand, a positive result is said to be of definite significance. The unfortunate feature of the test is that a definite result is seldom given by one particular protein, whilst all others remain quite inactive; more frequently there is found a general idiosyncrasy for allied proteins. Such things as pollen, hair, feathers and dandruff, which come into direct contact with the respiratory mucous membrane, are more likely to give a definitely positive reaction than proteins, like those in food, which in the course of nature are subjected to digestive ferments. It may be noted that experiments by J. C. Walker[1] suggested that the younger the patient when asthma appears the greater the chance of protein sensitiveness being the important, if not the sole, ætiological factor, and in old people such a cause is certainly very rare.

MITCHELL BANKS MEMORIAL LECTURE AT LIVERPOOL.

Sir John Bland-Sutton delivered the Mitchell Banks Memorial Lecture on Nov. 5th in the Surgery Theatre of the University to a large audience representative both of the undergraduates and the profession as a whole. The lecturer chose as his subject Surgical Technique, and developed his theme with a world-wide wealth of allusion which made it at the same time fascinating to hear and provocative of thought. In speaking of methods of suture he passed from the simple armamentarium of the tailor bird through the use of living Michel clips in the shape of ants' mandibles by primitive peoples, up to the 50 different methods of closing the abdomen collected on the continent for a recent thesis. He deplored the lack of a perfect suture material. Turning to the varied methods of dressing wounds, he reminded his audience that, within the memory of those still living, cow-dung had been used for the purpose in this country, as it still was in India, where the "sanctity of the cow gave an added virtue to the cataplasm." The gilder used gold-beater's skin, whereas the carpenter employed glue and shavings, and in spite of all nature generally won. This observation had led him to discard dressings altogether except in cases where discharges required to be absorbed. The lecture, illumined by many a quiet shaft of humour, and borne along throughout on a deep under-current of philosophy, was brought to a close by a noble tribute to Lord Lister and the wonderful edifice of aseptic surgery which had been raised upon his work. At night Sir John Bland-Sutton was the guest of honour at the biennial dinner of the Liverpool Medical Institution. There was a crowded gathering of members and their friends at the Exchange Hotel. An interesting point was raised by Dr. Adami, Vice-Chancellor of the University, in replying on behalf of the guests. He pointed out how, in spite of the tributes constantly paid to the scholarship of classical centres of learning, none of our universities had followed their example in setting training of body and mind side by side as the ancients did. Only 200 of our 1800 undergraduates took part in the university athletics, and he thought that as medical men we should press for the establishment of a spacious gymnasium where men and women alike could discipline the body in rhythmic exercise and true physical culture, as an integral part of university life. Mr. R. Craig Dun, the president, who was in the chair, spoke of the Medical Institution and the admirable part it played in the professional life of the city.

THE CULT OF BEAUTY.

"WITH beauty comes the birth of beneficent optimism, the joy of living, the daring of creative effort, the elation and nobility of the personality—in a word, happiness." Such is the creed of the author of this book,[2] and when all allowance has been made for enthusiasm Dr. Frumusan does manage to convey the conviction that beauty and health go hand in hand. He urges that only with a return to the cult of the aesthetic in regard to our bodies will come that race regeneration with which the French as a nation are beginning to concern themselves. This return is to be accomplished by giving physical culture almost as important a place as mental culture in all educational establishments, and, while we in this country are considered by the author largely to have solved the problem by our school games, he would go further and cut down all time spent in school to five hours, of which three hours shall be devoted to study and two to physical exercise. But it is not only with the rising generation that Dr. Frumusan is concerned: the present generation is condemned for its habits, its clothing, its feeding, its ignorance on elementary matters of washing and cleansing, and, above all, for its sedentary method of living. Movement, from the cradle to the grave, is the keynote of the book, and while the author is often over-enthusiastic, there is running through it such a strong touch of common sense that it should make an interesting appeal to those concerned with health and the prevention of avoidable disease.

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[1] Boston Med. and Surg. Jour., 1918, clxxix., 288.

[2] Beauty: How to Regain and Retain. By Dr. Jean Frumusan. Translated from the French by Elaine A. Wood. London: Bale, Sons and Danielsson, Ltd. 1925. Pp. 124. 7*s.* 6*d.*

Bradshaw Lecture

ON

THE MUSCULAR DYSTROPHIES, SYMPATHETIC SYSTEM, AND ENDOCRINE GLANDS.

Delivered before the Royal College of Physicians of London on Nov. 5th, 1925,

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I PROPOSE to confine my remarks to the group commonly denoted as muscular dystrophy with special reference to the ætiology of these disorders. I shall submit to you evidence from various sources which appears, to me at least, to suggest that the muscular dystrophies may not be myopathies or primary diseases of muscle, as they are generally regarded at the present time, but that their symptomatology may perhaps be determined by disease of the sympathetic nervous system. I shall also refer to the question of a possible relationship between the muscular dystrophies and the endocrine glands. While I admit that the evidence which I shall adduce is suggestive rather than conclusive, for it is based to some extent on observations which require further corroboration, my remarks may prove of value should they serve to focus attention upon points calling for elucidation in the determination of this problem.

The observation, that in the majority of cases of muscular dystrophy the sternal portion of the pectoralis major wastes while the clavicular portion escapes, is well known to all clinicians. It has often occurred to me that this very striking fact must afford a clue to, or at any rate must be taken into consideration in any explanation which may be advanced to account for, the incidence of the muscular involvement in these disorders. I shall in the first instance approach the problem from this standpoint, but it may be well that I introduce my remarks with a brief and pertinent historical prelude with special reference to the ætiological considerations which it is my present purpose to discuss.

THE RECOGNITION OF THE MUSCULAR DYSTROPHIES.

Aran's communication,[1] published in 1850, was the means of directing general attention to the progressive muscular atrophies. Ten years later Luys (1860)[2] observed changes in the grey matter of the spinal cord in cases of the kind, and in 1874 Charcot expressed the opinion that the paralysis and wasting in cases of progressive muscular atrophy were due to a chronic degeneration of the anterior horn cells of the spinal cord. This view, which was for a time opposed by Friedreich and others, who regarded the cell changes in the spinal cord as secondary, before long met with general acceptance. Various clinical types of progressive muscular atrophy had, however, been previously differentiated in which no spinal cord changes had been observed. Thus Meryon (1852),[3] in a communication entitled a Granular and Fatty Degeneration of the Voluntary Muscles, described four cases of progressive muscular atrophy in brothers, in one of which, examined post mortem, the muscles presented the appearances referred to in the title of his paper, while no abnormality was found in the spinal cord. Then in 1861 Duchenne of Boulogne published his classical description[4] of pseudohypertrophic paralysis. Again in 1875 Leyden[5] reported certain cases of muscular atrophy, occurring in families, to which he applied the designation "hereditary type of progressive muscular atrophy." Gowers,[6] whose monograph upon pseudohypertrophic paralysis appeared in 1879, clearly recognised that "hypertrophy and atrophy may exist in different proportions, and there are cases which connect the two extremes—in some enlargement of many muscles, and in others wasting of all." Erb,[7] of Heidelberg, in 1883 described his juvenile type, and three years later (1885) Landouzy and Dejerine[8] a form, which differed merely from the juvenile type of Erb in that the facial musculature was involved, to which they applied the term "facio-scapulo-humeral." The recognition of the types last mentioned is of especial interest, since progressive muscular atrophy in the adult had previously been believed to be of myelopathic origin.

Erb[9] was chiefly responsible for placing our knowledge of these disorders upon a sure footing. Basing his conclusions upon a large series of cases which he had personally examined both clinically and pathologically, Erb laid it down that there are two kinds of progressive muscular atrophy, one in which there is a degeneration of the anterior horn cells to which the symptoms are to be directly attributed, and another in which no such changes are observed. To the latter group he applied the term muscular dystrophy. Further, he demonstrated that these two groups of cases differed not only in the distribution and nature of the atrophy, but also in the structural changes presented by the muscles. Again, he pointed out that the types described by Meryon, Leyden, Moebius, Duchenne, Landouzy and Dejerine, and himself were merely variations of the same disease.

THE PRIMARY MYOPATHIC VIEW A NEGATIVE CONCEPTION.

While the earlier writers agreed as to the absence of changes in the spinal cord, numerous cases of muscular dystrophy have since been reported in which a reduction in the number and size of the anterior horn cells has been observed. These changes have, however, been regarded as of secondary origin. Thus Gordon Holmes,[10] who in 1908 reported a case of pseudohypertrophic paralysis in which such changes were present, and reviewed the literature up to that date, writes :—

> "The histological changes in the ventral horns in my case were, it seemed to me, quite distinct from the degenerative cell changes I have found in any of the many spinal amyotrophies which I have examined, and the muscular affection exceeds them very much in both degree and extent . . . the most probable explanation of these cases is that the neural changes are secondary to the primary muscle disease."

Further, he adds :—

> "It appears to me very improbable that the myopathies have a neuropathic basis, indeed, I cannot see how this contention can be logically sustained. In the first place, there is no reason why the muscles of certain individuals should not possess a morbid tendency to regressive changes quite as well as parts of the nervous system, and, secondly, in the majority of cases which have been examined no histological evidence of nervous change to which the muscular atrophy could be secondary has been found."

The generally accepted view according to which the muscular dystrophies are of primary muscular origin is, however, a negative conception, for it is essentially based upon the negative findings in the nervous system. It is, indeed, interesting to note that Landouzy and Dejerine suggested in 1886[11] that although the nervous system has been found normal in muscular dystrophy, it may nevertheless be altered in a way we are unable to detect, an opinion which was also held by Vulpian. Again Erb wrote in 1890 :—

> "I cannot avoid the suspicion that after all the affection may be dependent upon the nervous system. It is tempting to suppose, as I formerly expressed it, that we have to do with a kind of tropho-neurosis having its origin in the trophic centres of the cord—a disturbance of the function of these centres which finds its expression in the very complicated muscle changes of the disease. A further rich experience, much thought expended upon the question, and particularly the above described anatomical findings (he refers to the changes in the muscles observed in poliomyelitis), have served to confirm me in my scruples."

New data have of late emerged which have a bearing on this problem, and I shall now direct your attention to certain apposite facts and discuss the conclusions which would appear to be legitimately derived from them.

Inferences from Comparative Anatomy.

The incidence of the muscular involvement in the common types of muscular dystrophy—the atrophic type without muscular enlargement, the pseudo-hypertrophic paralysis of Duchenne, the juvenile type of Erb, and the facio-scapulo-humeral type of Landouzy and Dejerine—is strikingly similar. (I do not include the distal type, since I am not satisfied that these cases are distinct from peroneal muscular atrophy. Again, I have omitted myatonia congenita, regarding which there is still considerable difference of opinion, as also myotonia atrophica, which I am inclined to think is a distinct disease.) Although great individual variations are met with, certain muscles are very commonly picked out, while others are as commonly spared. The question arises, Does comparative anatomy afford any explanation of the facts? A study of the earlier stages of the disease is, you will agree, more likely to prove informative than at a later date when the atrophy has become generalised. The case of a miner at present under my care provides a useful illustration for discussion, since the atrophy is very localised and complete, although its distribution is in some respects exceptional.

The patient, aged 46, is a particularly muscular man. He has suffered from no illness of a serious nature, nor, so far as he is aware, have any cases similar to his own occurred among his relatives. He states that, some ten years ago, he first noticed slight "stiffness" about the shoulders. The condition has, he thinks, become slowly more pronounced, but that it has not until recently given rise to any serious disability is evident from the fact that almost up to the time of his admission to hospital he was capable of doing a full day's work.

On examination a very localised but very complete bilateral atrophic paralysis is present. The muscles involved are the latissimus dorsi, the trapezius (including the upper third), the sternal portion of the pectoralis major, the serratus magnus, and the rhomboids, all of which are much wasted and absolutely powerless. The levatores anguli scapulæ are somewhat weak and wasted, especially on the right side. The brachioradialis is absent. All the muscles of the body apart from those mentioned are well developed and powerful, including the sternomastoid and the clavicular portion of the pectoralis major, the teres major, spinati, deltoid, and the muscles of the trunk and lower limbs. No fibrillary tremors are to be observed. There is no sensory loss and no alteration in the reflexes.

The atrophic paralysis in this case is limited, with the exception of the brachioradialis, to the extrinsic muscles of the shoulder-girdle. All these muscles are indeed completely paralysed excepting for the sternomastoids and the levator anguli scapulæ (the last-named muscle being somewhat weak and atrophic), and yet the patient suffers little inconvenience in consequence. The distribution of the atrophic paralysis if limited is, you will agree, characteristic of muscular dystrophy, although the fact that the levator anguli scapulæ and the upper third of the trapezius are affected is unusual, for these muscles are not, as a rule, involved until the later stages of the disease. Does comparative anatomy throw any light upon the localisation of the atrophic paralysis? Those of you who have read Sir Arthur Keith's fascinating Hunterian lectures[12] upon Posture: its Evolution and Disorders, will recall that he points out that in the pronograde animal the weight of the body is transferred to the upper limbs by a series of muscular slings or hammocks which are constituted by the extrinsic muscles of the shoulder-girdle, and that in the arboreal anthropoids, in which the arms and shoulders have to sustain the weight of the trunk, certain modifications take place in the musculature of this region. On the other hand, in man the trunk has to sustain the weight of the shoulders and arms, and "consequently we have here only to suppose a perfecting of a supporting reflex mechanism for the maintenance of the shoulders—a human character of late evolution." Now, is it not a striking fact that in the great majority of cases of muscular dystrophy it is the extrinsic muscles of the shoulder-girdle—the latissimus dorsi, the lower part of the pectoralis major and trapezius, the rhomboids, and the serratus magnus—which are prone to suffer; while, on the other hand, I think you will agree that the sternomastoid, as also the upper part of the trapezius and levator anguli scapulæ, the latter being muscles which constitute part of the sling system, but which have acquired new functions in relation to the supporting reflex mechanism necessitated by the erect posture, are in the earlier stages at any rate but seldom involved.

The escape of the clavicular portion of the pectoralis major calls for separate consideration. The pectoralis major is referred to by Dr. C. E. Beevor[13] as "one of the most interesting muscles of the body." As Wilfred Harris[14] has pointed out, the clavicular head below the gibbon is replaced by the anterior fibres of the deltoid. Indeed, Sir Arthur Keith indicates that the clavicular head of the pectoralis major is a new muscle—a late development in the process of evolution.

The absence of the brachioradialis in this case is of much interest. This muscle is, in my experience, very often absent in the muscular dystrophies. I have met with three additional cases in which it was absent, while all the other muscles of the forearm and upper arm were intact. The brachioradialis is really an upper arm muscle. W. Colin Mackenzie[15] points out that while in some animals, for example, the wombat, it is a muscle of great importance, in man it is "struggling hard to retain its place in the human economy." It would indeed appear in man to be a retrograde or regressive muscle with a comparatively unimportant function. And yet Sir Arthur Keith writes me it is a muscle which "is wonderfully constant—never absent."

These considerations would appear to suggest that it is the regressive or primitive muscles, as exemplified by the brachioradialis, which are especially predisposed in the muscular dystrophies, while, on the contrary, a muscle which is acquired late in the process of evolution—as is the case with the clavicular portion of the pectoralis major—and muscles which take on new functions in relation to the erect posture—as, for instance, the sternomastoid and upper part of the trapezius—escape.

Conclusions Derived from Embryological Observations.

The well-known observations of Babinski and Onanoff,[16] reported many years ago, are of much interest in relation to the problem under discussion. These observers found that the muscles of a five-months' fœtus varied greatly in their degree of development. Further, they noted that it is those muscles in which development is most advanced which are especially prone to suffer in the muscular dystrophies. In other words, their observations indicate that there is an intimate association between the degree of rapidity of the muscular development and the degree of predisposition to muscular dystrophy. Babinski and Onanoff employ figures with which to indicate the degree of development of the individual muscles, and tabulate their results as follows:—

Hand: muscles of thenar eminence, 2; muscles of hypothenar eminence, 2.

Forearm: brachioradialis, 5; extensors and pronators, 3; flexors of the fingers, 2.

Upper arm: biceps, 3; triceps, 3.

Shoulder, intrinsic muscles: deltoid, 4; infraspinatus, 3; subscapularis, 3. Extrinsic muscles: serratus magnus, 5; latissimus dorsi, 5; rhomboids, 5; adductor portion of trapezius, 5; clavicular portion of trapezius, 2.

Face: orbicularis palpebrarum, 5; masseter, 2; muscles of the auricle, 1.

Lower limbs: quadriceps, 5; calf muscle, 3; anterior tibial, 5.

It is interesting to compare these observations upon the development of the muscles in the fœtus with the incidence of the muscular involvement in the muscular dystrophies and with the observations on comparative anatomy to which I have just referred.

INCIDENCE OF MUSCULAR INVOLVEMENT REGARDED FROM THE STANDPOINT OF FUNCTION.

The problem of the incidence of muscular involvement may also be considered clinically from the point of view of function. Sir Charles Sherrington [17] has pointed out that while in various invertebrates individual muscles are specially differentiated for the execution of movements and the maintenance of posture, in the vertebrates, on the other hand, "the same muscle is used for the two purposes, though some muscles are predominantly concerned with one, some with the other function." Again, in the case of certain vertebrates, the rabbit, for instance, as Ranvier long ago demonstrated, some muscles—those which are obviously concerned more especially with active movement—are paler in colour than others which are obviously more especially concerned with the function of fixation. In man, however, there is no such difference in the naked-eye appearance of the individual muscles, nor, so far as I am aware, have two kinds of muscle-fibre been differentiated. Consequently, while further observation may serve to establish the presence of two kinds of fibres in the muscles of man, the possibility must be admitted, in the absence of evidence to the contrary, that the two functions—execution of movement and maintenance of posture—may be subserved by the same muscle-fibre.

The distribution of the muscular involvement in the muscular dystrophies suggests, I think, that muscles which are of special importance as fixators in relation to the maintenance of posture are predisposed, whereas muscles more especially concerned with active purposive movements of which we are more directly conscious are either spared or only suffer at a later date. We have already seen that the extrinsic muscles of the shoulder-girdle are commonly in great part involved, although the sternomastoid, upper part of the trapezius, and the levator anguli scapulæ as also the clavicular portion of the pectoralis major, which is, as I have mentioned, an intrinsic muscle, as frequently escape. Again, in the juvenile and facio-scapulo-humeral types the upper arm and thigh muscles are also affected. Further, when the muscles below the elbow and knee suffer, is not the weakness commonly most pronounced in the extensors of the wrist and the anterior tibial group, while the flexors of the fingers and the calf muscles, though the latter may be enlarged, remain comparatively powerful until a much later date? Dr. Beevor[18] laid it down that—

> "We have to differentiate in any movement between the muscles which take part directly in that movement and the muscles which are used to fix the joints which lie between the joint which is actively engaged and the fixed point or base on which the structure works."

The extensors of the wrist and the muscles of the upper arm play an important part as fixators in forcible grasping, while in running the anterior tibial muscles and the muscles of the thigh play a similar and equally prominent rôle. Now it is these muscles, which are especially concerned with fixation, which are at any rate first affected in the muscular dystrophies. On the other hand, the flexors of the fingers, the small muscles of the hand and the calf muscles, which are the prime movers in relation to the most important functions of grasping and running, tend to escape, as do the small muscles of the hand. Is it not the case, speaking generally, that as we pass from the periphery towards the trunk the muscles play a relatively more prominent part in relation to fixation as compared with conscious purposive movement? I would submit that muscles which are predominantly concerned with fixation are especially predisposed in the muscular dystrophies. This apparent relationship of the incidence of the atrophy to function suggests, does it not, a difference in nerve-supply?

DUAL INNERVATION OF SKELETAL MUSCLE.

It has long been known that the skeletal muscles are innervated by the somatic nerves which arise from the multipolar cells in the anterior horn of the spinal cord. Recent observations would, however, appear to indicate that the skeletal muscles also receive a sympathetic nerve-supply. Prof. J. T. Wilson,[19] who has summarised the evidence from the histological standpoint, concludes that—

> "It is difficult, if not impossible, to avoid the conclusion drawn by Boeke and supported by Agduhr and others from the results of what would appear to be crucial experiments, that these accessory fibres are sympathetic in origin and hypolemmal in their mode of termination. These relationships, if admitted, would seem to indicate a centrifugal conduction along these fibre paths of nerve impulses, presumably of motor and possibly of tonic contractile character."

The subsequent investigations of the late Prof. Irvine Hunter [20] upon this subject have, as you know, aroused widespread interest. While it is not my intention to discuss this question I may remind you that it was Kulchitsky's observation [21] "that the medullated and non-medullated fibres never terminate in the same muscle-fibre" which inspired Hunter's investigations. Hunter came to the conclusion from his histological and experimental observations that the differentiation of muscles into "movement" and "fixing muscles," which is so apparent in some invertebrates, is not lost in vertebrates, and that "the skeletal muscle of vertebrates consists of two sets of muscle-fibres disposed in groups each with its own specific innervation and consequently its own specific function." These two muscle systems of invertebrates are, he affirmed, represented as small muscle groups which mingle together to constitute the skeletal muscles of vertebrates. Further, Hunter's investigations led him to suggest that there are two kinds of muscle tone—first, "plastic" tone, which is responsible for the maintenance of any posture once it has been assumed, a function which he believes to be subserved by the sympathetic; and, second, "contractile" tone, which imposes posture on a limb as a result of shortening of appropriate muscles. These investigations and conclusions have been criticised by Walshe [22] who, in a brilliant review of Hunter's work, concludes that a sympathetic motor innervation of striated muscle has not yet been satisfactorily established, and that the experimental investigations undertaken to demonstrate the existence of two forms of tonic muscular activity, plastic and contractile, have not succeeded in doing so. It is, in Walshe's opinion, extremely doubtful if postural tone can be so divided into two separable components, and "consequently the question of a sympathetic innervation of a hypothetical 'plastic' component of postural tone cannot arise until the morphological problem is settled and until the existence of such a component has been demonstrated." Walshe's destructive criticism is of the greatest value, since it serves to indicate the possible fallacies and gaps in the chain of evidence, and indicates the necessity for caution in distinguishing between hypothesis and proved fact. At the same time, after carefully reading his review, I am still left with the impression that there is good reason for believing that the non-medullated fibres which pass to the skeletal muscles are probably sympathetic in origin and that they terminate in the muscle-fibres. In other words, as Langley, whom Walshe quotes, remarks, "the evidence is decidedly in favour of Boeke's views." Further, it is obvious that these fibres must have some function, and if they do terminate in the muscle-fibres, as the evidence would suggest, it seems probable that they are concerned with movement and very possibly with the maintenance of posture. The suggestion that the sympathetic supply to skeletal muscle has to do with muscle tone, the maintenance of posture and fixation has not been definitely proved; nevertheless, the evidence bearing on the point is, I think, very suggestive.

DEDUCTIONS FROM HISTOLOGICAL APPEARANCE OF MUSCLES.

I shall now very briefly direct your attention to the histological appearances of the muscles in the muscular dystrophies in so far as they appear to have a bearing upon the question at issue. Our knowledge of these appearances, which have been studied and described in detail by many observers, has been derived in part from the examination of portions of muscle excised during life and in part from post-mortem examination. The changes met with vary according to the stage of the disease and are characteristic, if not absolutely distinctive. Again, while they present certain common features, they vary in different muscles and even in different parts of the same muscle. In some muscles, and this would seem to be the earliest stage, the muscle-fibres are swollen and show a rounded contour with poor striation, an increase of nuclei, and little if any increase in the interstitial tissue. On the other hand, in other muscles many fibres of unusually small calibre are met with, together with a great increase of interstitial tissue, thickening of the wall of the blood-vessels, and narrowing of the lumen. The enlarged muscles of pseudohypertrophic paralysis may be found to consist chiefly of large fibres. Later both large and small fibres are found, together with a great interstitial deposit of fat. Eventually the fat is absorbed and the muscles diminish in bulk.

How are these various appearances to be explained? The possibility that the primary change consists in an increase of connective tissue with secondary alterations in the muscle may be dismissed, since in some of the muscles the fibres show pronounced pathological changes with little or no increase in connective tissue. Further, the whole trend of pathological thought of recent years has been to regard proliferation of interstitial tissue as a secondary compensatory process. We see this exemplified, for instance, in relation to certain diseases of the kidney, liver, and heart. Are the muscle changes primary? This is the view which is generally accepted at the present time. On the other hand, the increase of interstitial tissue is often very much greater than one would expect were its increase due to a secondary compensatory process. It is often, for instance, very much more pronounced than that which is met with in the muscular atrophies of spinal origin. This being so, is it not more probable that both the changes in the muscle and in the interstitial tissue are due to a common cause? I would remind you that Duchenne, in writing of pseudohypertrophic paralysis,[23] remarked:—

> "The causative irritation which produces the abundant muscular proliferation and the other alterations in the interstitial connective tissue of the muscles, appears to me to be the probable cause of their enfeeblement. But how is this alteration to be explained and at the same time the change in the connective tissue? This is a problem still awaiting solution."

The suggestion has been advanced that the thickening of the walls and narrowing of the lumen of the blood-vessels which are often to be seen in the connective tissue may be the determining cause. Buzzard and Greenfield,[24] for instance, referring to these changes in the blood-vessels, remark:—

> "It is thus possible that the disease is primarily one of the sympathetic system and that inadequacy of blood-supply to a muscular area may determine the changes in the muscle-fibres. But the bulk of opinion favours the hypothesis that the muscles themselves are primarily affected and that the interstitial and vascular changes are secondary."

The thickening of the blood-vessels is, however, only observed when there is a pronounced increase of interstitial tissue, consequently it would seem to be unlikely that the appearances in the muscles are due to a defective blood-supply. Possibly, however, we have here an explanation of the localised atrophy and "the cricket-ball appearance" which, although only occasionally met with, is so characteristic.

Is it not possible that if both the changes in the muscle-fibres and the increase of interstitial tissue are due to a common cause they may both be a direct consequence of disturbance of sympathetic innervation? Have we not a possible analogy in the tabetic arthropathies? Here we find trophic changes in bone, a tissue of low order. While in some arthropathies there is a great bony increase, in other instances the process is apparently atrophic from the first. We know little if anything of the changes in the muscles which follow sympathectomy. Hunter's observations [25] are suggestive in this connexion, for he has noted the presence of a number of small fibres, an observation which would appear to indicate that the sympathetic has a trophic influence on the muscle, and he also appears to have observed an increase of interstitial tissue greater than that which follows division of the somatic fibres. Thus he writes:—

> "In the case of sympathetic denervation which removes plastic tone, increase in fibrous tissue no doubt renders the muscle more efficient in maintaining a position imposed by active movement or by selective reflex activity. When contractile tone is removed by somatic denervation only a very slight increase of connective tissue occurs over a period of 60 days."

This sentence would certainly seem to suggest that Hunter observed a greater increase of connective tissue after sympathetic than after somatic denervation. Further experimental observations are, however, required with direct reference to this point. Lastly, I would remind you that Erb long ago pointed[26] out that in acute poliomyelitis similar morbid changes (hypertrophy, proliferation of nuclei, division of the fibres), both in the muscles and connective tissue had been noted by W. Muller, Dejerine and Huet, Joffroy and Achard, and Hitzig. But is it not the case that poliomyelitis is a disease in which changes referable to the sympathetic system—coldness and discoloration of the limbs, atrophic changes in the bones and contractures—are often pronounced? In chronic progressive muscular atrophy of spinal origin, in which the pathological changes are limited to the anterior cornual cells, no such changes are observed.

SYMPTOMATOLOGY APART FROM THE MUSCULAR ATROPHY.

Some of the phenomena observed in cases of muscular dystrophy cannot be accounted for on the assumption that these disorders are due to a primary disease confined to the muscles. The marbled appearance of the skin, which is not uncommonly seen in the muscular dystrophies, was such a striking feature in Meryon's cases that this observer was led to suggest a sympathetic origin for the disease. Contractures are often met with both in the early and later stages. They have been especially studied by Hahn [27] and others. Again, while contractures are not observed in the chronic progressive muscular atrophies of spinal origin, they constitute a feature of the clinical picture in many cases of acute poliomyelitis, a disease in which other manifestations pointing to disturbance of the sympathetic system are often present. Further, trophic changes in the bones have been described by Friedreich, Le Gendre,[28] Schlippe,[31] Dreyer,[32] Schultze,[30] Spiller,[29] Timme,[37] and others. Spiller remarks: "In a case reported by me the bones were undoubtedly involved, which seems to indicate that the disease may not be merely muscular." Schlippe, too, believes that the skeletal changes are brought about most probably by the same cause that produces the changes in the muscles. The thigh bone in one of Schultze's cases was only the thickness of one's middle finger, and the humerus was still thinner, the medullary cavity being very small. In the case of a boy of 15 with a muscular dystrophy of the pseudohypertrophic type at present under my care, the bones are almost as thin as in Schultze's case, though they are of normal length. Eulenberg[35] and Bregmann,[36] on the other hand, have reported cases of muscular dystrophy in which the bones were hypertrophied. Changes in the heart muscle have, I may remind you, been found by Bunting,[33] Potter,[34] Globus and others in pseudohypertrophic paralysis. Again, intellectual impairment, which is generally admitted to be not infrequent, led Duchenne at first to believe that he was dealing with a cerebral disease. Further, as I shall presently point out, pronounced disturbance of the endocrine glands is an occasional accompaniment, while it may be that slighter degrees of endocrine disturbance are not infrequent. These facts all suggest, do they not, that the atrophy of the muscles in the muscular dystrophies is to be regarded as merely the most prominent manifestation of a pathological process which is not confined to the muscles but is much more generalised.

HYPERTROPHY AND PSEUDOHYPERTROPHY.

Enlargement of muscles is a striking feature of some cases of muscular dystrophy. Very exceptionally, as in the case figured by Duchenne, most of the muscles are enlarged. As a rule, however, the enlargement is limited to certain muscles. It may be that the enlargement is sometimes a true compensatory hypertrophy as in two cases I have observed, in which there was great wasting of the quadriceps group, while the tensor fasciæ femoris was very large and powerful. The muscles in this case were not, however, examined histologically. In pseudohypertrophic paralysis enlargement of muscle is typically observed. But it is a mistake to suppose that the enlarged muscles are necessarily weak muscles. The increase in size may, as has been shown, be due, in the earlier stages at any rate, to an increase in size of the muscle-fibres, and there may be no increase of interstitial tissue and fat—i.e., no pseudohypertrophy. I have, for instance, under my care a boy of 11 with great enlargement of the calves and some contracture of the calf muscles, as a consequence of which he walks on his toes. The movement of plantar flexion of the feet in this case is very powerfully carried out against resistance; indeed, I am almost inclined to say that the power evinced suggests a true hypertrophy of the calf muscles; on the other hand, dorsiflexion of the feet is overcome with comparative ease, although there is no actual wasting of the anterior tibial group. The muscles of the upper extremity most often enlarged in pseudohypertrophic paralysis are the spinati, deltoid, triceps, and the extensors of the forearm; while the muscles of the lower limbs, in which enlargement is most often observed, are the gastrocnemii, glutei, quadriceps, and sartorius. Enlargement of the trunk muscles, the serrati, masseters, and tongue is occasionally observed. Very exceptionally are other muscles enlarged. Why is it that some muscles should show a tendency to enlarge, while others, if affected, invariably waste from the first, and why do certain muscles enlarge more often than others? It is, I think I may say, speaking generally, the bulky muscles which usually show enlargement. Is it possible—I put forward this suggestion with considerable diffidence—that these muscles are, on account of their bulk, of especial importance as glycogen storers, and that the enlargement is in some way associated with this function?

Why does pseudohypertrophy occur in some cases of muscular atrophy and not in others? This is not to be explained by the age factor, for although pseudohypertrophy is pre-eminently met with in the cases which occur in childhood, it is not observed in all children suffering from muscular dystrophy, and it is also met with in adults as, for example, in some cases of the juvenile type. Then, again, it is not an essential family trait, for a number of instances have been recorded (Erb, Gowers, Byrom Bramwell, and others) in which some members of a family have suffered from pseudohypertrophic paralysis and others from the same type of muscular dystrophy but without enlargement of the muscles. Obviously, under such circumstances individual predisposition must be the determining factor. A relationship between the muscular dystrophies and the endocrine system has recently been suggested, and I shall presently cite cases which appear to indicate a relationship between disturbance of pituitary function and pseudohypertrophic paralysis. I would suggest that the pseudohypertrophy may possibly be a superadded phenomenon so to speak, and that its occurrence may be determined by a tendency to hypopituitarism, the fat being absorbed at a later date in response to the economic demands of the tissues. Falta[38] refers to a case of hypophyseal dystrophy reported by Marinesco and Goldstein in which fat-permeation of the muscles was apparently found, and he states that this is also observed in primary genital adiposity and in castrated animals.

CAUSE OF THE PARALYSIS.

The sympathetic supply to skeletal muscle is part of an involuntary system, and if the muscular dystrophies are due to disease of the sympathetic, how are the loss of power and atrophy to be explained? If it is the case that the same muscle-fibre is innervated by both somatic and sympathetic nerve-fibrils, may it be that disease of the latter eventually interferes with the voluntary contractile function of the muscle? If, on the other hand, Kulchitsky's view is correct and Hunter is correct in his conclusion that "the two muscular systems of invertebrates are represented as small groups which mingle together to constitute the skeletal muscles of vertebrates," may it be that the voluntary muscle-fibres or the nerve-fibrils which innervate them are secondarily involved? Gordon Holmes suggests[39] that the changes met with in the anterior horn cells in some cases of muscular dystrophy may perhaps be explained by supposing that "the terminal branches of the axis-cylinder, left naked by the disappearance of the muscle-fibres, will be probably injured and possibly destroyed by the connective tissue which proliferates secondary to the muscle disease." May it be that the voluntary nerve-fibrils are secondarily injured and ultimately destroyed by the changes in the muscle or in the interstitial tissue, the increase of the latter resulting not as a secondary process but, as I have suggested, as a direct consequence of disturbance of the sympathetic innervation? But if this is so, why is it the exception to find changes in the anterior horn cells? Here, again, I would refer to Gordon Holmes's suggestion[40] that—

> "The integrity of the nervous system in some cases of primary muscular atropby is parallel to the fact that sometimes all the ventral motor horn cells disappear after amputation of the segment of the limb which they supply, while in other cases these cells may be practically unaffected."

The enlarged muscles in pseudohypertrophic paralysis for long retain their power. May it be that the fat acts as a cushion or buffer and prevents strangulation of the voluntary fibrils which are only involved at a later date when, as the fat is absorbed, the muscle wastes?

MUSCULAR DYSTROPHIES AND ENDOCRINES.

The question of a relationship between the ductless glands and the myopathies has of late been referred to repeatedly in the literature, notably by the endocrinologists. References to this relationship from the neurological standpoint are, on the other hand, comparatively infrequent. The muscular dystrophies have not received much attention in this relation. Isolated clinical observations have been accumulating, but hitherto very few post-mortem examinations upon cases of muscular dystrophy have been reported in which special attention has been directed to the condition of the endocrines. In two cases studied anatomically by Goodhart and Globus,[42] the only pathological changes in the organs of internal secretion were observed in the thymus, while Clarke and Atwood[41] found in one case an enchondroma of the hypophysis. Pathological observations are necessary in order definitely to establish the suggested relationship on a sure basis.

I shall now direct your attention to certain observations which seem to me to suggest that there is a relationship between disturbance of pituitary function and the muscular dystrophies. I may commence by citing briefly the leading facts of a case in which pseudohypertrophic paralysis was associated with adiposity and defective sexual development.

W. M., aged 11, was admitted to my care on the recommendation of Dr. Andrew Rutherford. The youngest of a family of five, none of his relatives so far as is known have been similarly affected. Always somewhat stout, at the age of 6 he was operated upon for an acute appendicitis. At that time it was first noticed that he was easily knocked over and often fell when walking, and at the same time he began to increase greatly in weight. The muscular weakness has been steadily progressive.

The patient is very stout. His height is 4 ft. 1 in., his weight 7 st. 13 lb. The mammæ are somewhat prominent and there is a definite mons veneris. Although he is said to have been rather backward at school his intelligence appears to be little, if at all, below the average. The genitals are poorly developed, the testes being very small and soft. Headache has not been complained of. The visual acuity, the fields of vision, and the fundi (examined by Dr. H. M. Traquair) show no abnormality. The total quantity of urine for the 24 hours averages 24 oz. The fasting blood-sugar, taken on two separate occasions, was 0·108 per cent. and 0·113 per cent. The sugar tolerance could not be determined. The basal metabolic rate was +11 per cent. on June 1st, 1925; −14 per cent. on Oct. 28th, 1925. Examination of the fæces shows 33 per cent. of fat in the dried stool (split 57 per cent., unsplit 43 per cent.). The systolic blood pressure is 112, the diastolic 90. X ray examination shows no enlargement of the sella turcica or other obvious abnormality. Further, there is a pronounced atrophic paralysis with a typical distribution as met with in pseudohypertrophic paralysis, affecting particularly the muscles of the shoulder-girdle and trunk, the upper arm muscles, and thighs. The muscles below the elbow, notably the extensors of the wrist (the brachioradialis was absent), as also the muscles below the knee, especially the anterior tibial group, show pronounced weakness. There is very definite enlargement of the calf muscles, but on account of the adiposity it is not possible to determine whether there is enlargement of other muscles.

When two uncommon pathological conditions coexist in the same individual the question naturally arises: Is the association accidental or is there some relationship, and, if so, what is it? I have been able to find records of similar cases reported by Foerster, of Breslau,[43] Dziembowski,[44] and McCouch and Ludlum.[41] I have also heard of two further cases as yet unpublished. Fœrster refers to the frequency of adiposity and high sugar tolerance in muscular dystrophy. I can personally recall two or three cases of pseudohypertrophic paralysis, seen many years ago, in particularly fat children, and it is, I think, very probable that these would nowadays be regarded as cases of pituitary adiposity. Gardiner-Hill, I. Jones, and Forest-Smith[45] have recently reported 60 cases of adolescent pituitary obesity "in which the primary disturbance seems to be one of pituitary function," a fact which indicates that this condition is far from uncommon. It is, indeed, probable that slighter degrees of pituitary adiposity are often not recognised. Again, it may well be that the muscular weakness may be overlooked in cases in which the glandular symptoms are pronounced. Dr. John Thomson recently mentioned to me a case of pseudohypertrophic paralysis in which the patient became very stout, an observation which would suggest in this case at least a special tendency to put on fat.

But it is further of interest to note that cases have been described by Eulenberg, Marquard,[46] Timme,[47] and Janney, Goodhart and Isaacson[48] in which appearances suggestive of acromegaly occurred in association with muscular dystrophy, a rather striking fact in view of the age of these patients. The following case of muscular dystrophy in which the patient's appearance is suggestive of acromegaly is of interest in this connexion.

J. A., aged 18. A younger brother suffers from pseudohypertrophic paralysis, and a sister has symptoms of rib pressure. A maternal uncle was dumb and is said to have walked in a similar manner to the patient. At the age of 7 the patient developed measles, and from that time his lower limbs and arms became progressively weaker. There is no definite history of enlargement of the muscles. Two years ago people began to remark upon his changed appearance, and he himself noticed about that time that his face was becoming larger.

The patient is somewhat childish. His height is 5 ft. 4 in., his weight 11 st. 13 lb. His features are coarse and large, the lower jaw is long and heavy, the lower teeth project above the upper and are set widely apart; the lips are thick and the mouth very large. The palpebral fissures are narrow, the nose broad and flat, the eyebrows and eyelids thick, the tongue large. There is a large simple goitre. The scalp is very mobile, the hands and feet are thick and broad. The hair is thick and coarse, and there is an excessive growth of hair below the knees. There is a good growth of pubic hair which extends upwards towards the umbilicus. The genitalia are rather infantile. The visual fields show no abnormality. X rays of the skull show no enlargement of the sella turcica or frontal sinuses. The average amount of urine passed during the 24 hours is 37 oz. The heart is somewhat enlarged to the left, but the sounds are pure. The systolic blood pressure is 135, the diastolic 95; sugar tolerance is diminished. The distribution and features of the muscular atrophy are typical of the later stages of pseudohypertrophic paralysis.

All these observations suggest that disturbances of pituitary function are met with in cases of muscular dystrophy with a comparative frequency which cannot be accounted for by coincidence.

A relationship between the pineal gland and muscular dystrophy has been suggested by Timme[47] who, in reporting four cases of "a somewhat atypical muscular dystrophy rather resembling Erb's infantile type," states that "the probability approaches pretty closely to proof that disturbances of the pineal gland play an important rôle in the pathogeny of progressive muscular dystrophy." I cannot here discuss Timme's interesting observations and conclusions. I may say, however, that he attaches considerable importance to "changes in the pineal gland demonstrated by roentgenology." Again, when an endocrine disturbance is met with in association with a muscular dystrophy, may it not be that both are dependent upon a common cause? Cases of muscular dystrophy associated with a pluriglandular disturbance have been reported by Claude[49] and by Brock and Kay.[50]

A hypoglycæmia has been noted by several observers in cases of muscular dystrophy. Thus Janney, Goodhart and Isaacson report nine cases of muscular dystrophy in all of which there was a definite hypoglycæmia. They remark that—

> "The constant presence of hypoglycæmia and the evidence of delayed glucose utilisation in muscular dystrophy make it probable that defects in carbohydrate metabolism are intimately connected with, if not directly causative of, the metabolic picture of the disease. . . . It seems likely that the muscles in this condition undergo weakness, atrophy, and degeneration as the supply of their carbohydrate pabulum is interfered with."

McCrudden and Sargent,[51] who have studied a case of muscular dystrophy with hypoglycæmia in great detail from the laboratory point of view, are of opinion that the hypoglycæmia may underlie the great fatiguability. Again, Goodhart and Globus, who also emphasise the association of hypoglycæmia with muscular dystrophy, hold similar views. But while these observations are of much interest further facts are required, for my own experience leads me to doubt the constancy of hypoglycæmia in muscular dystrophy.

NATURE OF THE PROCESS.

If, as I have suggested, the muscular dystrophies are determined by disease of the sympathetic, what is the nature of the process? If the sympathetic is selected by disease, is it not reasonable to assume that it may be affected by different pathological processes as are the somatic neurons? Is it not possible, for instance, that the sympathetic neurons may not only degenerate but that they may be picked out by selective poisons? Here, however, we are on the boundaries of a field of which we have little if any knowledge. Cases of recovery from muscular dystrophy have been reported by Erb,[52] Marina,[53] Jendrassik,[54] and others. The diagnosis between pseudohypertrophic paralysis and a toxic neuritis may on occasions, notably in the absence of a family history, give rise to great difficulty. This was so in a case which I have reported elsewhere.[55] In this case the late Dr. F. E. Batten, who was in doubt as to the cause, finally committed himself to a diagnosis of pseudohypertrophic paralysis, and the patient eventually recovered. So far as I know, in all the reported instances in which recovery has occurred, the cases were isolated, no other members of the family having been similarly affected. Is it possible that in these cases of reported recovery from muscular dystrophy the process may have been a toxic neuritis which has selected the sympathetic neurons and thus produced an atrophic paralysis similar in distribution to that met with in the muscular dystrophies? Whereas may it be that the familial cases are determined by a degenerative process, a tendency for the sympathetic neurons to die an early death? I am, however, fully aware that speculation has its limitations.

CONCLUSIONS.

1. The generally accepted view according to which the muscular dystrophies are regarded as myopathies or primary diseases of muscle is a negative conception.

2. There is very considerable evidence which would appear to suggest that the skeletal muscles in man have a dual innervation—a somatic supply concerned with movement, a sympathetic supply with fixation. The suggestion is advanced that the muscular dystrophies may perhaps be determined by disease of the sympathetic supply to skeletal muscles.

3. The muscles especially predisposed to suffer in the muscular dystrophies are: (*a*) those which develop early in the fœtus; (*b*) those which are regressive (in the sense that they no longer fulfil such an important function as in an earlier stage of evolution) as opposed to those which have been acquired at a later date or have taken on new functions; and (*c*) those especially associated with the function of fixation. A difference in function suggests a difference in innervation.

4. The histological appearances met with in the muscular dystrophies are more easily accounted for by postulating a common cause than on the assumption that the process is a primary one affecting either the interstitial tissue on the one hand or the muscle on the other. An analogy is drawn with the tabetic arthropathies in which both hypertrophic and atrophic changes are met with.

5. Symptoms are observed in the muscular dystrophies which cannot be explained by a primary disease confined to the muscles. This would suggest that the atrophic paralysis of the muscles is merely the most prominent manifestation of a more widespread process.

6. It is suggested that the gradual loss of power and wasting may be determined either as a direct consequence of interference with the sympathetic innervation or as a consequence of secondary involvement of the somatic nerve fibrils by the changes in the muscles and interstitial tissue which result from disease of the sympathetic nerve-supply.

7. The suggestion is advanced that cases of muscular dystrophy in which great improvement or recovery has occurred may perhaps be explained by a difference in the nature of the pathological process. While the familial cases may be due to an abiotrophy of the sympathetic neurons, these isolated cases may conceivably have been determined by a toxic neuritis which has selected the sympathetic fibres and produced an atrophic paralysis of similar distribution.

8. Pseudohypertrophy, when it occurs, is an individual rather than a familial characteristic. It is here suggested that it may possibly be a superadded phenomenon dependent upon relative pituitary insufficiency.

9. Facts are submitted which appear to indicate a relationship between disorders of the pituitary gland and the muscular dystrophies. It may be that disturbances of the pineal and other glands also occur. The probability would appear to be that both conditions are due to a common cause rather than that the muscular dystrophy is secondary to the endocrine disturbance.

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DR. SCHWEITZER'S HOSPITAL FUND.—Some eleven years ago Dr. Albert Schweitzer, musician and medical missionary, opened a hospital at Lambarene in French Equatorial Africa specially for the treatment of sleeping sickness and leprosy. Early last year he returned to Africa with the object of starting a second hospital in the Cameroons, full facilities being provided by the British Government. Circumstances then prevented the carrying out of the project, but an appeal for help has recently been made by a British council, of which Dr. P. Manson-Bahr is the medical member, in order that Dr. Schweitzer's work may be extended. British Bulletin No. 1 explains the reasons why it should be possible to establish a hospital in British territory at Nyasoso. Up to Sept. 10th last £128 had been received in contributions. Anyone who desires to receive further bulletins should send name and address to Miss M. O. Bronner, hon. treasurer of the fund, at 15, Castleton Mansions, Barnes, London, S.W. 13.

THE SPECIFIC TREATMENT OF PNEUMONIA.

By J. STAVELY DICK, M.B., B.Ch. R.U.I.,
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There is little doubt the treatment of pneumonia at the present time is more chaotic than that of almost any other ailment. Some cases are treated with orthodox stock mixtures; others with some drug or combination of drugs in which the prescriber has faith; some believe in poultices, others in icebags. Specific treatment is not uncommonly given without any serious attempt to ascertain whether it is in fact specific—in other words, the precise nature of the infection is inferred, not demonstrated.

Serums and vaccines have revolutionised the treatment of some serious or intractable diseases, but opinions are still sharply divided on the question of their value in pneumonia. There seems, however, to be a fairly general consensus of opinion that specific treatment is more likely to be of decisive value if employed as a first, not as a last, resort. Wynn reports that of 107 cases of influenzal pneumonia 28 were treated with pneumococcal vaccine on the first day, and all recovered; whereas of 20 cases so treated on the fourth day of the disease five died. Lister, from a wide experience in South Africa, is in favour of vaccines in early cases, given in larger doses than we have been accustomed to in this country. He has demonstrated experimentally that the blood serum of rabbits develops specific antibodies after suitable doses of pneumococcal vaccine, and that rabbits so treated resist infection by living and virulent pneumococci, whereas rabbits not so protected invariably die. Lister seems to have definitely proved that prophylactic inoculation of pneumococcal vaccine reduced the incidence of pneumonia.

I have been using pneumococcal vaccine regularly for 15 years as opportunity offered, and, though I have had cases in which this treatment seemed to have no effect, I feel strongly that every incipient case of pneumonia or doubtful "influenza" should be treated with pneumococcal vaccine without delay. If vaccine is given as a routine in doubtful "influenzal" attacks, before definite physical signs are present in the lung, the results will often be so good that we are subsequently in doubt whether we have been dealing with an incipient pneumonia or not. For example:—

Case 1.—Some years ago I was asked to see a patient in consultation a little before midnight. The doctor in attendance had, with another medical man, come to the conclusion in the afternoon that the patient was suffering from incipient pneumonia. When I saw him his temperature was about 104° F.; he had a well-marked malar blush. His illness began some 12 to 18 hours before my visit. All the evidence available was in favour of the diagnosis already made. I gave him a medium dose of pneumococcal vaccine; and it was arranged that the three of us should meet in consultation the following afternoon. We did so, and were astonished to find that a complete transformation had occurred in the interval. His temperature was normal: his pulse had also fallen; but, fearing that he might not make an uninterrupted recovery, I took a blood culture, with a view to preparing an autogenous vaccine if necessary. The culture was negative.

A wider experience has shown that a negative result might have been anticipated. It is now clear that I should have taken a blood culture when his temperature was high the night before. If this had revealed a pneumococcal infection there would have been no doubt as to the nature of the illness, and little doubt as to the value of the treatment adopted. Of course, it may be argued that a negative blood culture does not exclude a pneumococcal infection. I quite agree: but it seems to me that for the purpose of establishing this treatment on a firm basis only positive cases should be considered.

Diagnosis by Hæmoculture.

Diagnosis by hæmoculture is more frequent than it was a few years ago; but I doubt whether its advantages and limitations are even now generally appreciated. A septicæmia is probably always present during the first few hours of a pneumonia. When this septicæmia persists to the later stages, and is associated with a comparatively low leucocyte count, I have found that the prognosis is bad, though the patient's general condition may seem fairly hopeful. Hæmoculture in pneumonia has recently become more important for treatment also. When positive it is the most convenient and rapid method for ascertaining the type of pneumococcus present, as a preliminary to the use of the Rockefeller serum in Type 1 cases. But this septicæmia is, as a rule, transient; it usually disappears in a day or two in cases of moderate severity. Fortunately, it is present most frequently at the stage when we are most in need of help in diagnosis and guidance in treatment. Besides, a positive blood culture permits of the earliest possible preparation of an autogenous vaccine.

As evidence of the comparatively transient character of the septicæmia in pneumonia, I may recall a case I published ten years ago. It came under observation during the incubation period, the only case of the kind I have seen. It is also relevant in this connexion as it was treated with pneumococcal vaccine on the first day of the fever.

Case 2.—A man, aged 46, consulted me in the evening on his way home from work. His pulse was 92; temperature normal (? or subnormal); he had no pain or other sign of a serious illness, but I was well acquainted with him, and, though I could find nothing wrong, I believed him when he said he *felt* ill, as he was paler than usual, with a distinctly "pinched" expression. Next morning I found his temperature 102° F.; pulse 108; respirations 40. Pneumococcal vaccine was given at once, and at the same time a blood culture (10 c.cm.) was taken; this yielded a profuse growth of pneumococci. Next day there was some improvement, but on the third day of the fever his temperature again touched 102° and his respirations 48–50. There was now some cyanosis, and for this reason some blood was taken from a vein and 10 c.cm. of it used for a second culture. This culture was sterile, though the patient was obviously in a serious condition. A larger dose of vaccine was now given, and next day (the fourth day of the fever) the following observations were made: Morning: temperature, 102°; pulse, 120; respirations, 58. Evening: temperature, 98°; pulse, 76; respirations, 54. The respirations continued high for several days, and there was still some delirium and restlessness. His pulse, however, never rose again above normal, and the temperature only touched 100° one evening. He has remained in good health up to the present time (1925).

I suggest that in this case there is a reasonable presumption that the natural course of events was modified by the vaccine. If this view be accepted it follows, I think, that this method of treatment should be tried on a larger scale than hitherto in incipient cases; but I venture to urge that hæmocultures are indispensable until conclusive evidence of the value of the treatment is forthcoming on a large scale. A mere multiplication of results similar to that recorded in Case 1 can hardly be expected to settle the question. I have had a number of results similar to that in Case 2 in the last 15 years, and many others are recorded in papers by Harris, Morgan, Raw, and Wynn. My experience points mainly to the necessity for prompt treatment of incipient cases. I can cordially endorse Dr. Wynn's dictum that early pneumonia "should be regarded as an acute medical emergency demanding prompt action in the same way that a perforated duodenal ulcer and acute appendicitis are regarded as acute surgical emergencies."

The treatment of incipient pneumonia is the concern mainly of the private practitioner, for it is he who is faced with these emergencies. The consulting physician sees them at a later stage, often, indeed, so late that specific treatment, if employed at all, is not given a reasonable chance. But material for a final assessment of the value of specific treatment in early pneumonia can hardly be anticipated from the isolated efforts of individual private practitioners under present conditions. If pneumonia were dealt with on similar lines to diphtheria as regards diagnosis, specific treatment, and notification the outlook would be more promising. In connexion with pneumonia, however, I suggest that it would be desirable not only to provide pathological facilities and vaccine or serum, but also some sort of clearing-house, preferably as a department of the public health service, which would collate clinical records. This would eventually permit of a sufficiently wide scrutiny of results to settle the matter to the satisfaction of all except perhaps the occasional crank who refuses to be influenced by evidence.

Conclusions.

I may summarise my conclusions as follows: (1) A medium dose of stock pneumococcal vaccine is free from risk; it appears to be of decisive value in many incipient cases; it should be used with the least possible delay. (An autogenous vaccine or Rockefeller serum involves some delay; they can be used later, if required.) (2) Any estimate, favourable or unfavourable, of specific treatment is comparatively worthless where the diagnosis is based solely on clinical evidence. (3) Hæmocultures are more frequently positive in incipient pneumonias than in the later stages; when positive at the onset they are helpful in treatment as well as diagnosis; when positive in the later stages they provide one of the most reliable foundations for accurate prognosis.

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LIPIODOL IN THE DIAGNOSIS OF PREGNANCY.*

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SINCE the discovery of X rays efforts have been made in different maternity hospitals to obtain radiographs of the fœtus during pregnancy, in order to make diagnosis clear and to throw light on conditions not recognisable by ordinary clinical methods. This problem has been partly solved by the newer apparatus, for it provides us with rays of such quality as to allow the taking of radiographs of the fœtus after the third month of pregnancy. These rays comprise a certain percentage of hard and white rays, from which must be eliminated the secondary rays and the reflections produced by the Potter Bucky diaphragm, in order to obtain a picture of the bony structure of the fœtus. There is no other way to make clear or to confirm a diagnosis in the early stages; X rays are absolutely indispensable for the diagnosis of a twin pregnancy, an anencephalous fœtus, or a dermoid cyst in case of non-appearance of the period for the first month or two. The exact appreciation of a pelvis narrowed in its different diameters can only be had after a good radiograph, and all the cases diagnosed by us have been successfully operated upon, for, before starting operation, we knew exactly what we had to deal with.

Apparatus and Method.

The best method of taking a good radiograph is to use a modern equipment—an apparatus which produces 100 kilo volts, 80 milliampères, tube Müller, Metro, or Medor, double reinforcing screen, films Victor, &c. These are the elements that must be relied upon in order to give a full measure of security. The photographer's art is indispensable in these cases in order to obtain the highest possible definition and clearness. It is also of great importance to have the bowels evacuated and that the fœtus and patient should be motionless. A purgative and an enema must be given the day before the radiograph is taken, and on the day of examination another enema is given with 40 drops of laudanum (Sydenham) in 50 c.cm. of water, and 10 to 20 drops are given to the patient one hour before the radiograph is taken. In this way a successful radiograph may be obtained from the fourth month of gestation.

Radiography Before the Fourth Month.

What I am about to explain is something different, something essentially new—viz., the taking of radiographs before that stage, a method entirely my own. It was perhaps by a scientific inspiration that, after the injection of lipiodol into the trachea, as used by Prof. Sergent, I conceived the idea of adopting the method with the uterine cavity, and so making possible a diagnosis of pregnancy. When a period or two is missed you can never be quite sure that a patient is pregnant, for the uterus might be small or it might be ante- or retro-flexed. In such cases a precise diagnosis is only possible by the use of X rays to show whether the cavity be occupied or not. In the different pregnant patients in whom we have injected lipiodol into the uterine cavity we did not provoke an abortion, while, on the other hand, the radiograph has enabled us to arrive at a positive diagnosis.

Usefulness of the Method.

In these conditions we have laid down fixed rules. When a woman after conception, and after one or more missed periods, wants to know if she is pregnant, and the clinical examination is indecisive, lipiodol must be injected into the uterus. A radiograph should then be taken in order to give absolute certainty. Under no other conditions must we proceed, in order to avoid dangerous eventualities.

If the injection has been successfully made the radiograph of the uterine cavity filled up with lipiodol shows: 1. That the cavity is not well filled if the fœtus is more or less developed, the lipiodol penetrating round the fœtus, and showing that the cavity is occupied. 2. The round shape of the stain with the radiograph of a tube together with the clinical symptoms indicating the pregnancy. 3. When the fœtus is larger, the liquid penetrates very little, in a line more or less curved, and the form of the radiograph of the uterus indicates the pregnancy. 4. If the period is missed once or twice and the patient thinks herself pregnant, the injection of lipiodol into the uterine cavity may show in triangular shape and at the same time one or both tubes may fill up with the liquid. In such a case the radiograph shows that the uterine cavity is unoccupied and there is no pregnancy. 5. Every radiograph of the uterine cavity must be complete in order to show the neck and cavity for a satisfactory diagnosis to be made from it, together with the clinical symptoms. 6. The radiograph may thus allow us to diagnose sterility due to obstruction of the tubes; for it may be observed that they do not fill or fill up badly. 7. In cases of pyosalpingitis and old salpingitis a radiograph of the tubes can be obtained and the diagnosis confirmed.

The procedure to be described is entirely new and is submitted now to others for the test of further experience. Hitherto we have had no means of trustworthy diagnosis of pregnancy in the first months. The problem is a serious one, for in all maternity homes there are records of cases of early pregnancy which have been operated on for fibroma. The injection of lipiodol into the uterus does not provoke abortion if definite rules are observed.

Technique of the Method.

We have applied this method in the case of all our patients who have presented themselves without any special selection and without any disturbance further than a careful disinfection of the vagina and the bladder. For that purpose we give, before taking the radiograph, a mild laxative in order to clean out the bowels; at the same time we douche the vagina with rivanol and instil twice a day silver nitrate solution or choleval into the bladder if there be cystitis. Four hours before we give 20 to 30 drops of opium, in order to keep the patient quiet. On the day of the injection we clean the vagina with liquid formalin soap, we brush the neck of the uterus with tincture of iodine, and with the most careful antiseptic precautions we introduce a large metallic cannula into the uterine cavity until the Brandt ring can pass. Then we inject 1 to 2 c.cm. of lipiodol, we take the radiograph, and inject, if possible, another 2 to 5 c.cm. and take a second radiograph. At the same time, if a better radiographic picture is wanted we inject 40 to 60 c.cm. of air into the bladder. The patient must be lying on her shoulders and in the Trendelenburg position.

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* Presented at the London Congress of Radiology.

In the cases in which diagnosis is doubtful between a tumour and pregnancy we inject the first day 2 to 5 c.cm. of lipiodol, and the following day we inject air into the tubes in order to cause a pneumoperitoneum of 150 to 200 c.cm., the patient being in the Trendelenburg position. Afterwards we inject 5 to 10 c.cm. of lipiodol in order to show the uterine cavity. We use the liquid warm, without employing much force, with a light pressure, and without moving the cannula within the uterus.

During the injection the eyes of the patient must be observed, for the pupil is dilated when the liquid enters the tubes. The pupillary reaction is characteristic. When the injection enters the tubes it produces a little colic, and first there is a dilatation and afterwards a contraction of the pupils. If the woman has had salpingitis, this reaction is much stronger, but the passing of the liquid through the tube does not cause any pain. The lipiodol runs all over the uterine walls and penetrates into the tubes if these are free, but if they are obstructed on account of a former salpingitis they do not fill up. In these cases it is necessary to persist with the injection once or twice more in order to get them filled.

In cases where we wish to know if the tubes are permeable, whether for the diagnosis of sterility or of salpingitis, the technique is different. In these cases we previously empty the bowels, make the patient urinate, and give her 30 drops of opium in some water one hour before. Then we introduce 10 to 20 c.cm. into the uterus with a big cannula, the neck of the uterus being well closed in order to avoid the passing of the lipiodol into the vagina. The lipiodol fills up the uterus and passes into the tubes. If the lipiodol drops out into the vagina we repeat three or more times, until we are sure that it has passed. Before taking the radiograph we fill the bladder with air. In the cases of salpingitis the tubes do not fill up with the first injection; and it is necessary to repeat the injection until we obtain a good radiograph.

By this procedure it is possible to find out the causes of sterility in women, whether that be obstruction of the tubes or malposition. In cases where the tube is twisted the radiograph will give us a clear view of all details. If we are confronted with a tumour of doubtful nature we induce pneumoperitoneum by the ventral way or by way of the tubes, and then the injection of lipiodol is made into the tubes and the radiograph taken, the patient being in the Trendelenburg position. By this means the clear space in the pelvis due to the pneumoperitoneum reveals the tumour of the uterus and the relations of both with other organs.

Finally, I wish to mention that in Buenos Aires Dr. Uslenghi, Dr. Martinez, and the author have tried to provoke abortion in tuberculous patients by this means when it was indicated, but we did not succeed.

Corrigendum.—In the legend to Dr. C. C. Chesterman's illustration of the effects of tryparsamide in sleeping sickness (THE LANCET, Nov. 7th, p. 966) the word "tryparsamide" where it twice follows "ago" should read "trypanosomes."

A CASE OF
POLYCYTHÆMIA RUBRA RELIEVED BY X RAY TREATMENT.

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THE case about to be described has been under close observation for 12 months, and is of interest because of the great improvement effected by X ray treatment applied to the long bones of the limbs, with the object of arresting overproduction of blood. It is suggested that the method may also be useful in treating certain cases of high blood pressure.

Clinical Record.

The patient was an unmarried woman, aged 42, whose mother died of Bright's disease at 38, and the father at 48 of "meningitis." During life his appearance and symptoms were similar to those of his daughter. The patient had had no severe illnesses until 1919, when she first noticed a blotchy non-pruritic rash on the left forearm. In April, 1919, she had two attacks of what was thought to be a severe nettle-rash of the face. The blotches on the left forearm came at intervals, but in other respects she was well till May, 1921, when she felt giddy and sick, and fell in the street. About a month later she woke one morning and felt a sharp pain down the left side of the head and left arm; the arm was numb and the hand has been weaker since. The power is gradually coming back, but the fingers are still weak. At that time the left knee-jerk was found to be exaggerated, and there was some staggering on walking. Headache and giddiness increased gradually. In the autumn of 1923 she noticed swelling and numbness of the left hand; and when examined in Paris in November, 1923, the blood was found to contain 7½ million red cells per c.mm. and blood pressure was 175 mm. Hg. The patient was put on a lacto-vegetarian diet with rests, and remained without much improvement till admission to Ruthin Castle in June, 1924.

On examination the face was high-coloured, fingers tended to be clubbed, and there was a blotchy, dark pink rash on the left forearm. The pulse was regular, of good volume, the artery wall not palpable during diastole, blood pressure 204/120 mm. Hg. The cardiac impulse was in the left nipple line, and the aortic second sound was accentuated. The electrocardiograph showed a normal P.-R. interval and an inverted T in lead III. The blood had 130 per cent. hæmoglobin measured by Sahli's apparatus, and contained 7 million red cells and 8000 white cells per c.mm. The differential count showed a normal distribution of these white cells. The viscosity of the blood was greatly increased; its withdrawal through a needle of ordinary bore was difficult and the blood clotted rapidly. There was no loss of power or altered sensation in the distribution of any of the cranial nerves, but distinct weakness and slight diminution in the circumference of the left arm and forearm. The muscles of the leg appeared normal. The knee-jerks were active and normal, and the left arm-jerks were increased in comparison with the right. Both plantar reflexes were flexor. Sensation to touch and pin-prick in left arm normal, but there was inability to name objects by touch (astereognosis).

The edges of the liver and spleen were firm and palpable. The urine contained 0·5 per cent. of albumin, and there were a few casts and epithelial cells in the deposit. The urea-concentration test was at the third hour 2·4 per cent., a low normal value. The basal metabolism rate was 100 per cent. of the normal. Sugar-tolerance curves for glucose and lævulose gave normal figures. The fractional test-meal showed super-acidity. X ray examination of the alimentary tract showed an abscess of the right upper premolar tooth, enlargement of the liver and spleen, and considerable delay in the colon. The diagnosis was made of essential polycythæmia rubra, with thrombosis of a vessel supplying the cortical centre for the left arm and hand.

Treatment.—The patient was treated as follows: The lacto-vegetarian (anticonstipation) diet, which had been taken for some time, was continued and the affected tooth removed. One grain of thyroid was administered twice a day and an intestinal douche twice a week. X ray treatment to the long bones was given twice weekly, on 25 days for 8 minutes each treatment, from July 4th to Oct. 17th, with the object of arresting the overproduction of blood. Diathermy was applied from hands to feet on the other 4 days a week, 12 minutes for each treatment, passing 800 ma. Fig. 1 shows curves of the blood count and blood pressure before, during, and after the treatment.

Clinically, the colour became normal, headache and giddiness disappeared, and the spleen was no longer palpable. A subjective feeling of well-being accompanied the return of the red blood cell count to normal. The urine still contained on April 21st, 1925, a faint trace of albumin. No casts were found. The electrocardiograph showed as before an inverted T wave in lead III.

It is now nine months since the treatment was discontinued. During this time the patient has remained well and repeated examinations have shown a normal blood count.

Results.—A steady improvement in the blood count, the blood pressure, and the clinical state took place when these measures were used. It will be seen that the red cells and hæmoglobin diminished to normal values, which have been maintained. At the same time the blood pressure fell to a normal figure.

Discussion.

The simultaneous fall in blood pressure to a normal level is striking. This fall may have been the result of diathermy treatment, but, from a comparison with a large number of other cases, I think this is unlikely. The blood was at first much more viscous than normal and was aspirated with difficulty through a needle. The increased viscosity itself is an explanation of the high blood pressure owing to the increased work which the heart must do in order to drive the viscous blood through the arterioles. Parkes Weber [1] has pointed out that many cases of polycythæmia show no rise of blood pressure, and attributes this to a compensatory dilatation of capillaries. Other possibilities are that adrenalin-like substances having a pressor action might bring about a raised blood pressure, and at the same time an inspissation of the blood, owing to greater perfusion of the watery constituents; but such a toxin would probably not have so continuous an effect. It may be that there is also excessive production of red blood corpuscles by a bone-marrow over-stimulated by some poison.

FIG. 1.

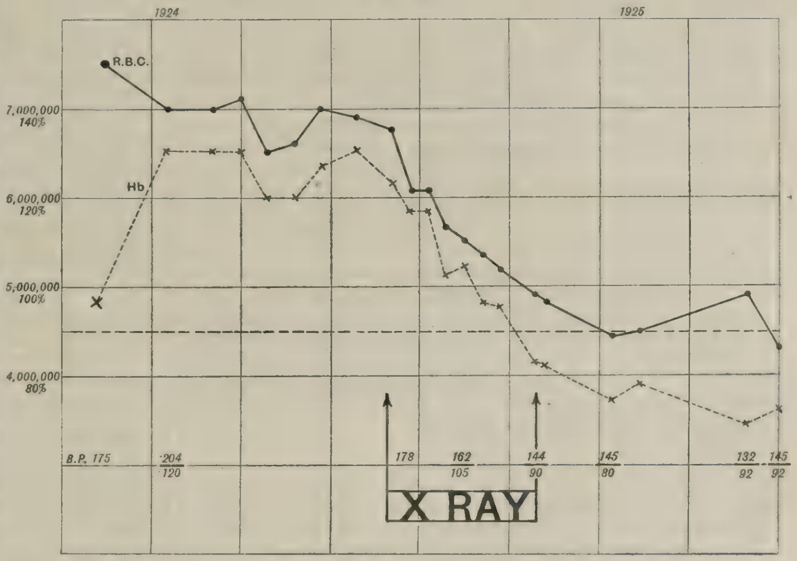
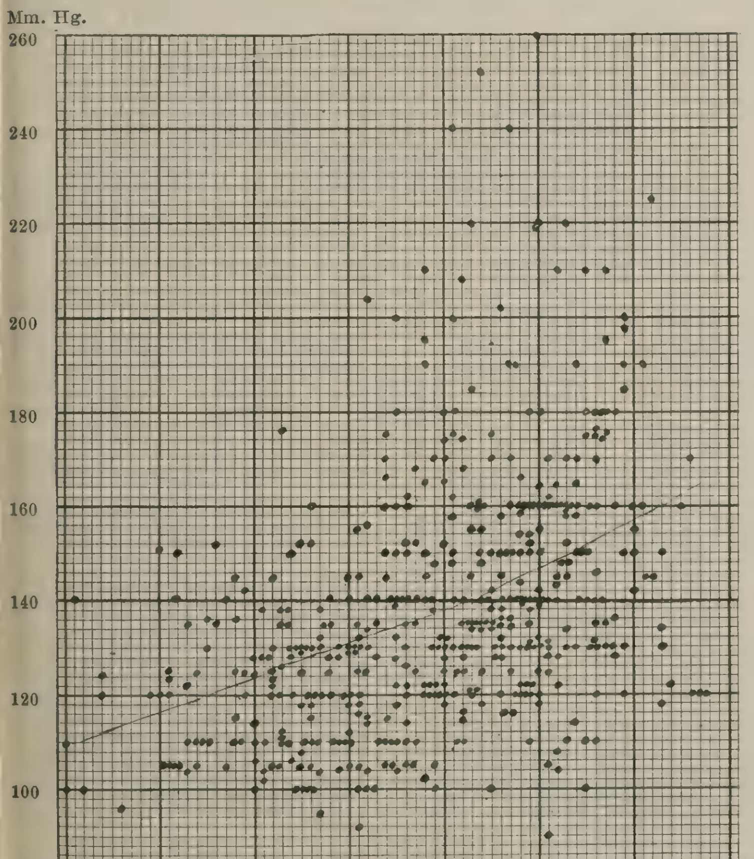


FIG. 2.



Suggested Use of X Rays in Cases of High Blood Pressure.

The successful result in the above case suggests that the application of X rays to the long bones may be of value in the treatment of high blood pressure. The red cell count in patients with high blood pressure may be above or below normal. Those showing counts above normal are often the subjects of early heart failure and show signs of cyanosis, but a certain number of patients with blood pressure above normal have been found to have a supernormal red cell and hæmoglobin count, apart from any failure of the heart. Patients with low red count are often the subjects of secondary renal disease. From the records of Ruthin Castle, of the last 41 patients with a systolic blood pressure of 180 mm. Hg or more, 19 had a red cell count and hæmoglobin above normal—i.e., nearly 50 per cent. The chart (Fig. 2) shows the systolic blood pressures of 489 cases at Ruthin Castle in relation to their age. There is, of course, a rise in the average systolic blood pressure with increasing years. Of those having a blood pressure above normal, 41 out of 84 had also a high red cell and hæmoglobin value, 29 being distinctly supernormal.

Patients suffering from hypertension have been greatly benefited by venesection and the removal of one-half to one pint of blood, but the good effect of this is only temporary, and it is suggested that a more lasting effect may be obtained by diminishing the red blood cells by applying X ray to the marrow in the long bones, in this way reducing the red blood corpuscles slowly and under control.

During the treatment of patients in the Frankfürter Frauenklinik by deep X ray therapy, Wolmershäuser [2] noted that 75 per cent. showed a fall in blood pressure which might amount to 50 mm. of mercury, and this fall occurred whether the patient suffered previously from hypertension or not. This was attributed to a dilatation of the skin vessels and possibly to increased vagus action on the heart.

The first patient on whom this method was tried was a married women, aged 52, who had been admitted on a previous occasion for high blood pressure, headaches, and attacks of giddiness. Under treatment for four months by diet, rests, graduated exercises, diathermy, baths, and venesection (three times), the blood pressure, which had been 240, was reduced to about 170–180. Soon after her return home the headaches and giddiness recurred, making her an invalid and calling again for venesection. She was readmitted to Ruthin Castle and the same treatment carried out with the addition of X ray exposures of the long bones twice a week. The blood pressure fell from 214 to 150–160 mm. Hg in two months, and the patient has been able to lead a comfortable though restricted life for the last four months. Recent reports give the blood pressure as still 150–160, although the hæmoglobin and red corpuscles have increased again.

Summary.

A case of essential polycythæmia rubra was treated successfully by exposing the long bones to X rays with the object of arresting overproduction of blood. It is suggested that the method may also be useful in treating certain cases of high blood pressure.

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TWO CASES OF
ACUTE GLOMERULITIS.

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THE picture of acute nephritis usually presented to students and practitioners alike in this country is that of a disease associated with œdema, hæmaturia, and albuminuria. It is, in fact, the clinical picture presented by either the "nephrotic" or "Misch" forms of nephritis of Volhard and Fahr,[1] the most recent systematic writers on the subject. This type of acute nephritis is by far the most commonly met with in practice; none the less, it is well to bear in mind that it is quite possible to have a very acute and fatal nephritis presenting no œdema at all in the clinical picture. Such a type of nephritis is the acute glomerulitis described by the German authors. It is probably not a common condition, though its rarity may be more apparent than real, since the possibility of its occurrence is seldom taken into account in the making of a diagnosis. These considerations serve as the reason for the publication of the cases described below.

Clinical Records.

CASE 1.—Female, unmarried, aged 22. In good health up to three days before admission. Sudden onset with abdominal pain followed on the second day by vomiting and severe headache. No urine was passed during the 48 hours preceding admission to hospital.

Condition on Admission.—The patient was drowsy and almost comatose; temperature normal; pulse 76. Blood was oozing from the gums and the head was retracted. The abdomen was rigid and both pain and tenderness were present in the epigastrium. Catheterisation resulted in the drawing off of a few ounces of blood-stained and highly albuminous urine. Death occurred on the day following admission, the patient up to that time having been running a temperature up to 102° F.

Post-mortem Examination.—The body showed no œdema, nor was any excess of fluid present in the serous sacs. The only organs showing any abnormalities were the kidneys; these appeared large, tense, and deeply congested; on section the capsule stripped readily, the cortex was increased in depth and dark in colour. Microscopically the kidneys showed no fibrosis and little round-celled infiltration, and no apparent abnormality of the tubular epithelium. Many of the tubules, more especially the convoluted, were stuffed with blood, coming apparently from the glomeruli, upon which the whole brunt of the pathogenic agent appeared to have fallen. The glomeruli were universally affected and all in the same way and to the same degree. The tufts were so swollen that they completely filled the capsular space; the normal differentiation of the tufts had disappeared and the nuclei appeared to be increased in numbers. Many of the tufts showed hæmorrhage. The endothelium lining Bowman's membrane in every instance showed some degree of proliferation, which in many cases had proceeded to the formation of pronounced "endothelial crescents." All the glomeruli showed collections of round cells about their periphery; in some instances these collections were fairly extensive, and where this was the case it was often apparent that the continuity of Bowman's membrane had been dissolved, and the inflammatory round cells had actually passed into the intracapsular space and were invading the tuft itself. Although all the glomeruli without exception showed signs of morbid change the tufts showed no inflammatory cells, except in those instances in which solution of Bowman's membrane had occurred. The appearances suggested that the vitality of the tufts had been universally damaged by some pathogenic agent, and that the invasion by round cells was occurring as the result of this devitalisation. The objective of the round cells appeared to be the tuft itself, but it would seem that they were unable to reach it until actual solution of the capsular membrane had been brought about.

CASE 2.—Female, aged 12. Had been in bed for two weeks prior to admission with diarrhœa and vomiting, becoming increasingly acute. At the onset there had been swelling of the face in parotid region on both sides, but this had subsided.

Condition on Admission (May 23rd, 1925).—Temperature normal, pulse 84; mouth and tongue very foul; patient almost comatose. There was general tenderness and rigidity over the abdomen; the urine contained much albumin.

Course in Hospital.—May 24th: Vomiting continuing. Condition otherwise unchanged. Only 5 oz. of urine passed. 25th: Bleeding commenced from mouth and gums and continued until death. A dark red morbilliform rash appeared, patchy in distribution, affecting face, trunk, and limbs alike. No urine passed. 26th: No urine passed; 2 oz. collected by catheter. 27th: Temperature still normal; pulse 96. The vomiting became violent, and blood was brought up in considerable quantities up to the time of death on the following day. No urine passed.

The results of the laboratory investigations on this case were as follows.

Urine.—May 24th: Much blood present, no casts or organisms seen. Albumin + + +; reaction acid; urea 1·64 per cent. 26th (catheter specimen): Much blood present, film shows numerous streptococci but no pus cells. Culture *B. coli* and streptococcus. 27th: Same as for previous day except that streptococci were obtained in pure culture.

Blood.—May 26th: Urea, 648 mg. per cent.; red cells, 5,580,000 per c.mm.; white cells, 36,700 per c.mm.: polymorphs, 95 per cent.; lymphocytes, 5 per cent.

Cerebro-spinal Fluid.—May 26th: No pleocytosis. Globulin slightly in excess (? due to contamination by blood). Sugar, 137 mg. per cent.

Post-mortem Findings.—Body was that of an emaciated and poorly developed female child showing the remains of a dusky rash on face, trunk, and limbs. Heart: Nothing abnormal. Lungs: Right lung showed some small localised patches of consolidation; left lung nothing abnormal. The liver, spleen, intestines, and brain showed no abnormalities. The stomach showed some areas of hæmorrhage into the mucosa, but no bleeding points from which the vomited blood might have come. Kidneys: Right 185 g., left 176 g.; both large, dark red, and tense. On section the capsule stripped readily leaving a perfectly smooth surface. The cut surface showed marked bulging; the cortex was greatly increased in thickness and somewhat pale in colour. The histological appearances of the kidneys were almost identical with those described under Case 1. The only difference was in the comparative lack of proliferation of the endothelium lining Bowman's membrane with a consequent rarity of endothelial crescents. These were present, but not nearly so plentifully as in Case 1. The tufts showed the same changes as in Case 1, but on the whole to a rather greater extent. Proliferation of the intracapillary endothelium was marked and degeneration had proceeded to breaking up and pyknosis of the nuclei.

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[1] Volhard, F., and Fahr, Th.: Die Brightsche Nieren-Krankheit, Berlin, 1914.

Comments.

Case 2 corresponds fairly closely to the intracapillary type of glomerulitis of Volhard and Fahr, while Case 1 is a good example of the extracapillary type. These two cases, however, serve as illustrations of the fact that these two types are not really distinct entities, as each showed changes both of the extra- and intra-capillary types, though the relative distribution of the two types of lesion differed in the two cases. Owing to its rapid termination in death Case 1 was incompletely investigated. Considering, however, the close resemblance of the histological appearances of the kidney in this case to those shown in Case 2, it seems justifiable to assume that the results of the clinical laboratory investigations would have been the same. The blood-urea in Case 2 was very high, and presumably urea retention was also a feature in Case 1. This, of course, was to be expected in view of the almost complete suppression of urine. The blood picture in Case 2 is interesting; the high white count would seem to indicate an acute infection; the temperature, however, remained normal throughout. In Case 1 the rise of temperature to 102° F. just before death also points to the presence of an infective agent. The generalised morbilliform rash in Case 2 serves also to point to the activity of an infective agent. This rash occurs occasionally in cases of mixed glomerulo-tubular nephritis; curiously enough, such a case with rash happened to be admitted to the same ward a few weeks after the death of Case 2.

The presence of streptococci in the urine in very large numbers in Case 2 suggested that this organism might be the cause of the condition. The complete absence of pus cells from the urine, however, was strongly against this assumption. It seemed much more likely that the streptococcus was a saprophyte growing in the scanty stagnant urine; the presence of *B. coli* along with it lent support to this view, as also did the fact that the streptococcus was non-hæmolytic and gave the reactions of *S. fæcalis* (Holman). Careful search through sections stained with eosin and methylene-blue failed to reveal any organisms in either case, and on this evidence the streptococcus was definitely ruled out as an ætiological agent.

The combined evidence presented by these two cases none the less points strongly to the infective origin of acute glomerulitis. The absence of any pus cells in the cellular reaction occurring around the affected glomeruli would appear to rule out the pyogenic cocci as the causative agents, while at the same time the histological picture corresponds to that produced by none of the recognised pathogenic organisms. Granted the existence of an infective agent it would seem that it must be one of those not detectable by ordinary microscopic methods. The relationship of this extremely acute and rapidly fatal type of glomerular nephritis to the more common glomerulo-tubular type is open to question. It is possible that with a less overwhelming infection the course of the condition might have been slower, allowing for the appearance of the characteristic tubular changes. On the other hand, acute glomerulitis of the type described may be an entity in itself, bearing no relationship to the mixed form.

Summary.

Two cases of pure acute glomerulitis are described, both with fatal issue. Both cases were characterised by almost complete suppression of urine and complete absence of œdema. Evidence is adduced pointing to the infective nature of this type of case, though in neither of the two instances described could the causative organism be identified.

My thanks are due to Dr. T. H. Galbraith and Dr. E. H. Coleman, in whose beds the cases described were patients while in hospital.

Clinical and Laboratory Notes.

A CASE OF
UNDULANT FEVER CONTRACTED IN ENGLAND,
AND COMPLICATED BY HÆMORRHAGIC EFFUSION INTO THE PERITONEAL CAVITY.

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AND

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As a condition arising in this country undulant fever is sufficiently rare to command attention. There appear to be few such instances in the literature, but one was reported by Byam[1] in 1918. The following case presented unusual features.

The patient was a male, aged 28, by occupation a draughtsman. His family history revealed nothing of import. During the war he served in France, and was inoculated with T.A.B. vaccine in 1916. While in France in 1917 he suffered from trench fever and influenza, but there was nothing to suggest that during this period he suffered from undulant fever. Early in October, 1923, patient was staying in the country, and whilst there on one or two occasions drank raw goat's milk. A few days later he returned to London, and about the middle of October, ten days or so after partaking of the milk, his illness began. This incubation period of ten days corresponds to that usually described. The first symptoms noticed were severe night sweats, rise in temperature, and a general feeling of unfitness. A week later both hip-joints became stiff and painful, and a little later still the left wrist was painful and swollen. At the end of a fortnight, however, both hips and wrist had returned to normal, but pains in the shoulders followed and these in turn passed off. The night sweats became worse, and his temperature taken on two successive nights was 104° F. This condition continued, and he was admitted to St. Thomas's Hospital on Jan. 1st, 1924, at the request of his medical attendant, Dr. R. C. P. Whitcombe, who suspected undulant fever.

Condition on Admission.—The patient was anæmic, and had obviously lost a considerable amount of weight. The pulse was 96, regular, full and easily compressible. The heart sounds were normal, and there was no evidence of cardiac enlargement. No abnormal physical signs were found in the chest. The spleen was just palpable. The urine had a sp. gr. of 1020, acid, and contained neither albumin nor sugar. The illness proved to be long and tedious.

After admission the fever continued, with headaches and night sweats varying in intensity from time to time. On Feb. 6th it was noticed that the abdomen was becoming distended. There was tenderness over the spleen and dullness on percussion in both flanks. About the 10th the fever began to subside, but the abdominal distension slowly increased, and on the 15th 50 c.cm. of a dark hæmorrhagic fluid was withdrawn for examination. The distension, however, became more and more marked, and on the 26th 8½ pints of similar fluid were withdrawn. Following paracentesis the patient showed a marked improvement in the general condition, the severity of the symptoms diminished, and though a certain amount of fluid was left in the peritoneal cavity this was slowly and gradually absorbed, until, on examination on March 24th, the abdomen appeared normal. He also began to gain in weight. At the beginning of April, however, a relapse occurred, the temperature rising, and frontal headaches and night sweats returning with their former intensity. There was no recurrence of the arthritis or ascites.

On May 3rd, 1924, the patient was discharged from hospital at his own request, and since discharge he appears to have made rapid improvement, as in a letter received months later, in April, 1925, he states that his temperature has been normal since July, 1924, and that he is in good health and able to do his work without difficulty.

Bacteriological Examination.

A blood examination was undertaken on Jan. 2nd, 1924, the day after admission. The total leucocyte count was

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[1] Byam, W.: A Case of Malta Fever arising in England, THE LANCET, 1918, i., 873.

3480 per c.mm., of which 56 per cent. were polymorphs, 24 per cent. large lymphocytes, 10 per cent. small lymphocytes, 9 per cent. large hyalines, and 1 per cent. mast cells. The blood serum gave an agglutination with typhoid antigen at a titre of 1/100, with para. A at 1/50, but with para. B and C there was no reaction. These results were presumably attributable to the T.A.B. inoculation in 1916. The serum was found to agglutinate both *M. melitensis* and *B. abortus* antigens at a titre of 1/2000, which end-point is as high as that of the artificial serum prepared at the laboratory. A blood culture done on the same date proved subsequently, however, to be sterile, and two further blood cultures made at later dates were unsuccessful. Cultures were also made from the urine of the patient obtained on Jan. 4th, but *M. melitensis* was not cultivated, and two guinea-pigs inoculated with the urine intraperitoneally showed no ill-effects, and six weeks later were quite normal. The hæmorrhagic fluid from the abdomen was also examined. It contained a large amount of blood. Of the leucocytes 60 per cent. were lymphocytes and 32 per cent. polymorphs, and many showed vacuolation and other degenerative changes. The supernatant fluid after centrifugalisation agglutinated both *M. melitensis* and *B. abortus* to a titre of 1/1000. No organisms were found in films made from the centrifuged deposit, and none were grown in culture. Inoculation of a guinea-pig was without result, and the animal was in normal health three months later. It was subsequently killed and examined, but no evidence of tuberculosis or other disease was found.

A sample of milk from the goat was obtained for examination. Both the whole milk and the whey gave agglutination reactions with *M. melitensis* to a titre of 1/250 and with *B. abortus* to 1/500. Cultures made from the milk with a view to isolating the causative organism were unsuccessful.

Remarks.

The character of the fever in this case did not show such marked undulation as usually obtains in this disease. The occurrence of ascites with hæmorrhagic fluid was remarkable, and led to a suggestion, which was, however, disproved, that the patient was, after all, suffering from tuberculosis. It is possible that the effusion was associated with thrombosis of the portal vein, and in this connexion it is noteworthy that enlargement of the liver with jaundice and ascites has been seen by several observers, and is generally found late in the disease. It is interesting to note that several other persons, in addition to the patient, drank some of the goat's milk, but none of them contracted the disease.

LARGE MESENTERIC CYST IN AN INFANT.

REMOVAL; RECOVERY.

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This case is of interest on account of (1) the difficulty of diagnosis, (2) the successful result of an operation that was only undertaken as a forlorn hope on account of the great size of the tumour and the age of the patient, and (3) the pathology of the cyst.

A. L. D., a male infant, aged 4 weeks, sent by Dr. Sinclair Couper (Blackpool), was seen on Feb. 23rd, 1922, with a large tense, fluctuant swelling in the abdomen. The swelling had been present at birth and had grown steadily larger. There had been no vomiting and the bowels were regular. The child had been fed on dilute cow's milk and had lost ground in the last two weeks, during which slight œdema of the feet had developed.

Condition on Examination.—The baby was thin, with a strong cry. A round smooth swelling, very obvious on inspection, filled the whole abdomen except the left lower quadrant. The tumour was tense, fluctuant, and dull on percussion. Since the colon could not be palpated in front of it, the swelling plainly did not originate in the right kidney, but origin from the liver could not be excluded. As the swelling was evidently cystic, it was thought that operative measures might have a remote chance of success.

Operation (Feb. 24th, 1922).—Under nitrous oxide and ether anæsthesia, by Dr. K. B. Pinson, with preliminary subcutaneous infusion of normal saline, the abdomen was opened through the right rectus. A huge cyst was disclosed lying behind the peritoneum, with a coil of ileum stretched over the front of it. The liver and gall-bladder above it were normal. The cyst was punctured on the right side in a non-vascular area and some pints of clear fluid evacuated. The resulting collapse enabled one to see that the cyst was in the lower mesentery and had pushed the cæcum up into the left hypochondrium. The cyst wall was thick and muscular, and lined with a whitish membrane. Enucleation of the collapsed cyst was carried out gradually without tearing any of the main blood-vessels supplying the bowels. The dissection was tedious on account of a copious supply of small blood-vessels to the cyst and the friable nature of the cyst wall. When the entire cyst had been removed, the space between the two leaves of the mesentery was drained by a tube and the incision in the peritoneum sutured up to the tube. The abdominal wall was closed in layers.

Subsequent Progress.—Repeated subcutaneous salines were given for the first 24 hours, during which period the child showed signs of collapse. The tube was removed in 24 hours, and from the second day a steady improvement began, in spite of a superficial infection of the wound. In four weeks from the operation the child returned home in good condition with the wound healed. He has since grown into a strong and healthy boy.

Pathological Report.—The entire cyst was submitted for examination to Dr. (now Prof.) B. J. Ryrie, of the Department of Pathology, Manchester University, who reported as follows:—

> Many sections of the cyst wall were examined. All showed a muscular and fibrous tissue wall; some showed definite epithelial lining. The different layers constituting the cyst wall were unequally developed in different parts, but the total structure, as seen in the most fortunate sections, consisted of: (1) a thick outer layer of unstriped muscle cut transversely; (2) a thin layer of connective tissue; (3) an inner layer of unstriped muscle parallel to the plane of section; (4) a layer of connective tissue of varying thickness tending to merge gradually with a more vascular and more cellular subepithelial connective tissue layer; (5) a lining layer of columnar or cubical epithelial cells.
>
> The outer muscular layer was generally well developed. It showed varying degrees of fibrosis and hyaline change. The inner muscular layer was more variable. It was never entirely absent, but was in parts very largely replaced by fibrous tissue. It also showed areas of hæmorrhage, hyaline degeneration, and calcification. These changes tended to involve also the inner layers of the cyst wall, causing ulceration and calcification at the free inner surface. Such degenerating areas also were invaded by mononuclear or more often polymorphonuclear leucocytes, giving a more cellular appearance to the area and obliterating the structure of the wall. The epithelial layer was very patchy and imperfect. At one point it could be seen to dip down into the subepithelial connective tissue, but there was no true gland formation. The specimen was apparently an enterogenous cyst, with secondary degenerative changes in its walls.

C. N. Dowd,[1] in a well-known article on mesenteric cysts, gives a simpler classification of these cysts than earlier writers. He groups them into (1) embryonic cysts, (2) hydatid cysts, (3) cystic malignant disease. The varieties described as chylous, serous, and hæmorrhagic cysts he would regard as being of embryonic origin. He believes that the embryonic cysts arise either as rests from the ovary at an early stage of intra-uterine life, as in the case that he himself describes, or from the intestine.

There appears to be no room for doubt as to the enterogenous nature of the cyst in our case, and its position suggests that it may have arisen from the vitello-intestinal duct after the manner of a Meckel's diverticulum, becoming shut off, however, from all communication with the intestinal lumen. Higgins and Lloyd,[2] in a recent paper, consider that enterogenous mesenteric cysts arise more commonly from sequestration of diverticula from the intestine other than Meckel's diverticulum, but the fact that these cysts are found more often in close relation with the ileum than with the higher reaches of the small intestine appears to us to support an origin from the vitello-intestinal duct.

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[1] Dowd, C. N.: Annals of Surgery, 1900, xxxii., 515-542.

[2] Higgins, T. Twistington, and Lloyd, Eric I.: British Jour. Surg., 1924, xii., 95–105.

Medical Societies.

HARVEIAN SOCIETY.

AT a meeting of this Society held on Nov. 12th, with Sir JOHN BROADBENT, the President, in the chair, Dr. J. D. ROLLESTON read a paper on the

Differential Diagnosis of Scarlet Fever and Diphtheria and Modern Methods of Treatment and Prophylaxis.

He illustrated the similarity between the two diseases by the fact that it was little over 100 years since Bretonneau distinguished between scarlatinal and diphtheritic angina and established diphtheria as a specific disease, and it was only since 1861 that deaths from diphtheria, as distinct from those due to scarlet fever, had appeared in the returns. At the present time the difficulty in distinguishing between the two diseases was shown by the large number of cases sent to fever hospitals certified to be suffering from diphtheria or concurrent scarlet fever and diphtheria, when they were really examples of scarlet fever pure and simple. In the course of a year 47 cases had been sent to one fever hospital certified as diphtheria, but were found, after admission, to have scarlet fever instead. Dr. Rolleston laid stress on the fact that diphtheria and scarlet fever coexisted much less frequently than seemed to be supposed. He had often noticed that his junior colleagues showed an excessive zeal in cultivating the throats of scarlet fever patients in the acute stage, regardless of the fact that more or less faucial deposit was the rule in scarlet fever of any severity. In a case of scarlatinal angina in which organisms were found morphologically resembling diphtheria bacilli, the virulence test should be applied before assuming that the case was one of concurrent scarlet fever and diphtheria.

Owing to the remarkably mild type of scarlet fever now prevalent in London it was exceptional at the present time to see a case of scarlet fever with severe angina. A severe epidemic of the anginose type of scarlet fever had occurred in Yunnan (South China) in 1921–22 and had caused 50,000 deaths in the capital Yunnan-fu alone. The disease had at first been mistaken for diphtheria and treated by antitoxin, especially as the rash was often absent or so slight as to escape attention. Apart from bacteriological examination, the chief distinctions between the appearances of the troat in scarlet fever and diphtheria were, as Bretonneau pointed out, first, that in scarlet fever the inflammation was widely diffused over the tonsils, palate, and pharnyx, and was not, as in diphtheria, circumscribed to one spot; secondly, that the inflammatory process in scarlet fever, except in a late stage of septic cases, showed no tendency to attack the larynx; and thirdly, that scarlatinal angina was liable to be attended by more or less considerable ulceration which was usually absent in diphtheria. The condition of the mouth and tongue was often of some diagnostic assistance. In scarlet fever they were usually in a dirty condition with strings of mucus between the tongue and the palate which interfered with a good view of the fauces. The general condition was also of some help in diagnosis. Scarlatinal angina was accompanied by continuous pyrexia and delirium, whereas in diphtheria the temperature, though it might be high at first, rapidly fell to normal, especially after injection of antitoxin, and the mind remained clear. The therapeutic test was often of considerable value. When in a case of supposed diphtheria the temperature tended to keep high in spite of repeated injections of antitoxin, the probability was against the angina being diphtheritic in nature and there was a greater likelihood, though by no means a certainty, of the case being scarlet fever.

Prophylaxis and Treatment.

In dealing with prophylaxis Dr. Rolleston emphasised the fact that scarlet fever was not nearly so infectious a disease as some of the other acute exanthemata, especially measles and small-pox. It was through inability to realise this fact that too much importance had been assigned to the Milne method of inunction of the skin with eucalyptus oil and the application of 1 in 20 carbolic oil to the tonsils, which had lately been proved by Dr. Milne's successor, Dr. G. Gushue-Taylor, to be valueless. After giving a short account of active and passive immunisation against scarlet fever and diphtheria, Dr. Rolleston said that the most important principles in the treatment of diphtheria were injection of antitoxin and enforcement of rest. The earlier the antitoxin was given the better the results. He had never known a patient die of diphtheria or even suffer from severe paralysis when antitoxin had been injected within 24 hours of the onset. Late cases required relatively large doses of antitoxin, and it was a mistake to suppose that antitoxin was useless after the fifth day, as had been alleged. In a series of 160 cases injected with antitoxin on admission to hospital after the fifth day the mortality was only 11·2 per cent., whereas in the pre-antitoxin era, even when patients were brought under treatment at the commencement of the disease, the mortality was never less than 28 per cent., and not infrequently rose to 50 per cent. or more. The presence of membrane in the throat, however late the disease, was an indication for serum treatment, the doses ranging from 4000 to 12,000 units in mild cases to 18,000 to 24,000 repeated two or three times in severe attacks. Intramuscular injection, preferably in the vastus externus, was the best method of administration of antitoxin for the following reasons: (1) it was quite as simple as the subcutaneous method, it ensured more rapid absorption, was less painful, and less liable to give rise to abscesses at the injection site; (2) it was superior to the intravenous route not only in the greater simplicity of technique, but also in the less rapid excretion of antitoxin after injection. Intravenous injection was accompanied in a large proportion of cases by rigors, vomiting, and collapse, and did not in practice, whatever its theoretical superiority might be, appear to have any advantage over the intravenous method.

In only a comparatively small proportion of cases—namely, 16·5 per cent. in a series of 2000—had Dr. Rolleston found it necessary to employ local treatment of any kind. From comparative observations he had found that the average period for the throat to become clean after injection of antitoxin was practically the same whether local treatment had been employed or not. The time that a patient should be kept in bed should be determined by the character of the acute attack. After mild angina this period need not be more than three weeks, but in attacks of any severity the recumbent position should be enforced for seven or eight weeks at least as being the best safeguard against paralysis. An exception could be made in the case of infants who never sat up unless they were fit, and therefore need not be restrained from so doing. Dr. Rolleston maintained that there was no justification for the routine administration of alcohol in diphtheria, as recommended by some authorities, especially in view of the fact that it was generally recognised by scientific clinicians that it had no stimulant action on the heart, respiration, or vital activities in general, while its continued use was liable to increase the myocardial degeneration initiated by the diphtheritic poison.

Discussion.

Dr. R. A. O'BRIEN referred to the usefulness of the Schick test in the diagnosis of diphtheria. Every patient admitted with frank clinical faucial and laryngeal diphtheria gave a positive response to the Schick test, and on examination his blood would be found to contain no detectable antitoxin. Thus, for a definite diagnosis of clinical diphtheria in any instance of special interest, one would be entitled to ask proof that the patient was "Schick positive," that he had no antitoxin in his blood, that the course of the disease was typical, that the smear from an overnight culture made from a swab showed a preponderance of diphtheria bacilli, and that these bacilli proved to be virulent. In a number of instances reports had been received that people who were negative to the Schick test had afterwards suffered from frank clinical diphtheria. In every instance which the speaker had the opportunity of investigating it had been found that the Schick test result had been wrongly recorded, in some instances through the use of diluted toxin many months old, or that the clinical diagnosis was in error. With regard to the recent prohibition of active immunisation in Vienna owing to the Baden accident, the mixtures the speaker and colleagues had worked with had for a year or two past been made of toxoid and antitoxin. The toxin was first deprived wholly, or almost wholly, of its toxicity by treatment with formalin; it was then diluted ten times and a considerable amount of antitoxin added. The mixture still remained an efficient immunising agent and was, so far as test and experience went, a "safe" one. There was apparently some slight misunderstanding about the position of active immunisation in New York. In the course of health propaganda which was always going on in that city, it had recently been pointed out by the health authorities that the immunisation of children of school age was of great value, but that as a very large percentage of diphtheria occurred in children of pre-school age the time had now come for the public to realise that effort must be directed more especially towards the immunisation of young children through welfare centres, nurseries, &c. Active immunisation had, in the opinion of people in America, proved itself as a valuable aid to public health and it would be even more vigorously recommended to the public. The campaign had recommended itself to the financial judgment of insurance societies who had contributed considerable sums of money to the work.

Dr. C. C. OKELL gave a short description of the recent work of the Dicks and Dochez on scarlet fever and discussed some of the problems that have arisen from it. There was a possibility that more than one type of scarlet fever toxin might exist, but as yet there was no definite evidence on the point, and it was much more likely that the toxin was always the same. Five strains carefully examined by cross-immunity experiments showed no essential differences in the properties of their toxins. The practical bearings of the modern work on actual practice could be summarised as follows: (1) The Dick test divides those who are susceptible to scarlet fever from those that are not. (2) Active immunisation with toxin renders Dick-positive persons Dick-negative and presumably non-susceptible. (3) Potent antitoxic serum can be obtained in the horse which in 5 c.cm. doses temporarily renders Dick positive persons Dick-negative and which in 40–50 c.cm. doses has a definite therapeutic effect on cases of scarlet fever. The newer knowledge had also an application to diagnosis, since early rashes of scarlet fever were for the most part blanched by intradermic injections of either horse antitoxin or of serum from convalescent patients. The Dick test itself was almost always positive in the first 48 hours of the disease.

Dr. GRAHAM FORBES confined his remarks to the subject of diphtheria and the question of the practicability of immunisation on an extensive scale in so large a centre as London. The recent decision of the London County Council not to include that preventive measure at present in their scheme of medical treatment of school-children was not unexpected in view of the difficulties which the problem presented in the matter of the numbers to be dealt with, quite apart from anticipated parental objections. Further, results were also awaited of the immunising work, chiefly in residential institutions, being done by the Ministry of Health and various local authorities in Great Britain, where up to date it was estimated that in all about 22,000 of the population had been Schick tested and some 4000 immunised, inclusive of 4500 of tested and 2000 immunised in the Edinburgh schools—figures which provided insufficient data in comparison with the high totals supplied by New York; there, since 1920, roughly half a million had been tested and one-third of the school population had been immunised. The outcome of such widespread prevention was being watched with the greatest interest, but the results were not yet regarded as entirely conclusive. Time would doubtless show how far immunisation was proving effective in the reduction of the incidence and mortality of diphtheria in New York. The decline in 1922 and 1923, which seemed to point to a marked improvement, had not apparently been maintained in 1924 and 1925.

New York.

Year.			Cases.		Mortality per 10,000 population.
1921	..	..	15,000	......	16·0
1922	..	..	10,000	......	15·0
1923	..	..	8,050	......	9·0
1924	..	..	9,687	......	11·9
1925 (6 months)	..	..	6,056	......	14·9

Dr. O'Brien, however, had informed him that the recent rise in New York had been forecast by Dr. Park as likely to be associated with a concomitant prevalence of measles, and to be expected from the large number of susceptible children, of former pre-school age and not previously immunised, now entering school and, therefore, coming in closer contact with possible infection. The example set by the Borough of Holborn, thanks to the initiative of the medical officer of health, seemed to point a way to obtaining the more widespread prevention of diphtheria in London if adopted by the authorities of other metropolitan boroughs.[1]

Considered from the purely financial aspect, it had been estimated that diphtheria alone in 1921 had cost the ratepayers no less a sum than £500,000. Even if it were possible or necessary to test the whole of the elementary school population (some 600,000) and immunise, say, 40 per cent., reckoned as susceptible, the total cost, he calculated, would not exceed a tenth of the sum spent on the present system of hospital isolation, treatment, and home disinfection. Therefore, by the introduction of immunisation, there was to be added to the hope of saving life and averting sickness the prospect of reducing heavy public expenditure.

BRITISH INSTITUTE OF PHILOSOPHICAL STUDIES.

THE Institute opened its winter session on Nov. 19th at the London School of Economics with a discussion on the

Idea of Responsibility, Legal and Medical.

The chair was taken by Mr. HAROLD LASKI, and Sir TRAVERS HUMPHREYS, opening the discussion from the legal side, limited his field to the medical aspect of legal responsibility and the criminal responsibility of a person for his own acts. A lawyer's business, he said, was to obey the law and not to criticise it, and he would therefore simply state the law of responsibility and the theory which he understood to underlie it. It was for the doctors to say what the law ought to be.

The Mens Rea.

The criminal law of the country was based on common sense, and the broad principle of responsibility was that a prisoner was regarded as responsible for his acts unless it was proved that he had not acted with a "mens rea," a criminal intent. A person would not be held responsible if he committed a crime in a state of somnambulism or hypnotism (unless he had himself hypnotised for criminal purposes), nor was he liable for an injury resulting from pure accident, though if a serious injury happened where a trivial one were intended he was held responsible because of his intent to harm. It had been found, however, in the course of legal evolution, that there was a class of criminals to whom this principle could not be applied; either they did not know what they were doing or else they thought that their action was perfectly lawful. They were thus legally "not guilty," but it was in the interests of society that they should be restrained from repeating the offence. These people were usually insane, and it became customary to record a special verdict in such cases, when the judge would order the accused to be detained for the state of his mind to be examined. This practice was subsequently regularised by law.

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[1] See THE LANCET, Nov. 7th, p. 962, Dr. C. W. Hutt: Diphtheria Immunisation in a Metropolitan Borough.

The McNaghten Ruling.

Insanity was notoriously difficult to define; many people were mentally unsound in some respects and not in others, or situated on the border-line. The famous McNaghten ruling was not new law, but merely a restatement of what had been legal for many years. The same principle was enacted in an Edinburgh trial of 1795. To plead ignorance of the nature of a serious crime was, of course, practically to plead insanity.

The Uncontrollable Impulse.

It had often been urged that the law should excuse a person who could prove that he committed a crime under the influence of an impulse which he was unable to control. The law certainly admitted no such plea at present, as a recent judgment of the Court of Criminal Appeal had emphatically declared; the Court further expressed the opinion that such a plea would have a subversive effect on justice. It seemed to be put forward only in murder cases. The difficulty in its application was the practical impossibility of establishing the fact of uncontrollable impulse by evidence.

Dr. **William Brown** spoke from the medical aspect of the question, and pointed out that the doctor could not escape from the problem, as the lawyer could, by disregarding all but the intellectual factor and making it an axiom that volition was the only test of responsibility for an act. An emotional factor had also to be considered. Many crimes were committed by people who knew well the nature and quality of their act, but who were nevertheless irresponsible through mental disorder. He instanced epileptics, melancholics, maniacs, and alcoholics. In a post-epileptic condition a butcher or soldier might commit a crime of violence through performing what was to him a habitual act. A melancholic who believed that ruin or torture were about to befall his family might deliberately murder them to save them from a worse fate, while the paranoiac might kill those whom he suspected to be plotting against him. Both would feel convinced that they were perfectly justified.

Individuals such as kleptomaniacs and exhibitionists knew that they were doing wrong, but suffered from compulsions so strong that the power of control of the normal man was insufficient to keep them in check. Psychological analysis showed that the events and phantasies of childhood and the repressions associated with them accounted for the impulses, so that in one sense the individual was responsible, but often less so than those who had brought him up. Responsibility must be put on the right persons, and collective responsibility was often as real as personal responsibility and as rigidly exacted.

The Question of Insanity.

Legal responsibility inevitably introduced the question of insanity as only the insane were held not responsible. Insanity was not a scientific concept; the scientific distinction was between the normal and the abnormal. Certification and legal "insanity" were concerned only with whether the individual were a danger to himself or others and depended to some extent on social position. To define abnormality was to enter the realm of metaphysics; science had to stop short of the problems of determinism and freedom, and assume that an individual's actions were explicable in terms of his heredity and antecedent acts. A normal man might be regarded as one whose whole heredity and life was a continuous progress towards the synthesis and harmonisation of his impulses. Most people, however, were abnormal, and the question was how far the law could take account of their abnormalities. At present it did so in terms of knowledge only. He wondered whether it would be a sufficient proof of uncontrollable impulse if the accused showed that he had had a deep analysis which revealed the source of these impulses. He illustrated his meaning from war-time court-martials on deserters. The phrase "tout comprendre est tout pardonner" was entirely wrong. Understanding made one realise the patient's difficulties but not think less of the crime. Responsibility was a matter of degree; a person in robust health was more responsible than an invalid. Psychologists did not want to abolish responsibility, but to redistribute it.

Discussion.

Mr. M. **Ginsberg** said that responsibility was intimately connected with punishment, and the only true test of responsibility was whether the man was capable of knowing at the time that he might be punished for it.

Mr. D. **Carswell** said that the McNaghten judgment had been abandoned in Scotland since 1870. He did not see that metaphysics and psychology had much to do with the question; it was for the jury to decide whether, considering a prisoner's mental state, it was fair to punish him.

Dr. T. B. **Hyslop** declined to attempt a definition of insanity until the lawyers had defined responsibility. In his experience the question of responsibility was never put to a medical witness. A sane man might commit a crime under the influence of hypnagogic hallucinations, and he had known an epileptic hanged for murder. What might be good law was bad medicine, and he regarded the McNaghten ruling as an effete judgment.

Dr. **Brown**, in reply, said that a man might be responsible to something beyond society, to his conscience, his ideals or his ideas of the cosmos, and that society might condemn him and be right according to its limited view of the situation. The distinction between the fanatic and the prophet was part of the work of deep analysis, which might thus help to solve the problem of responsibility.

ULSTER MEDICAL SOCIETY.

At a recent meeting of this Society, Mr. J. A. **Craig**, the President, in the chair, Prof. J. E. **MacIlwaine** read a paper on

Hyperpiesia.

The speaker gave Allbutt's definition of hyperpiesia as essential or primary arterial hypertension and discussed the mechanism of its possible production, dealing with the rôle played by the nervous system, cerebro-spinal and autonomic, together with the vascular musculature and the associated myoneural junctions. He referred to the experimental production of the condition by hormones, adrenalin, pituitrin, and by protein metabolites such as guanidin, tyramin, and emphasised the variable relationship to true arterio-sclerosis as well as the distinct separation of hyperpiesia from the hypertension of renal disease. Special stress was laid upon the hereditary tendency as well as the association of the condition with a history of vasomotor instability in early life. The endocrinic adjustment occurring at the menopause was cited to illustrate the part these glands must play in the hyperpiesia of this period of life. The signs and symptoms which may be complained of were briefly recapitulated, and it was pointed out that in many cases they were so vague as to be indefinitely classed as neurasthenic. Referring to a previous paper read before the Society upon nervous mechanism in disorders of the circulation, the speaker restated his assumption that in disordered action of the heart we had a toxic or inherent manifestation of instability in the autonomic nervous system which might be classified as a neurasthenic syndrome. To-day in the knowledge of the close association of psychic, psycho-motor and autonomic nervous system with the endocrine activities we might use a similar theoretical conception of an instability of this great controlling mechanism as a practical basis for the treatment of hyperpiesia. To relieve stress on this mechanism wherever possible should be the ideal, and he emphasised the primary importance of attention to the demand made by the assimilation of food on the autonomic nervous system.

Dr. S. Boyd Campbell read a paper on

Aortitis, its Prognosis and Treatment.

The speaker, after referring to the frequency of a syphilitic ætiology in aortitis, showed a series of 35 cases which were first seen in 1919–20. All of these cases had at that time definite signs of varying degrees of aortic dilatation, in some cases definitely aneurysmal in character. Of the 35 cases 7 died; in 5 of these the death was associated with œdema and cardiac failure, and in 2 death was due to a ruptured aneurysm. Signs of failure of compensation are always of grave import. Antisyphilitic treatment, he said, depended on the case. In active lesions iodides and later small doses of mercury were used. Arsenical preparations should be given in small doses, starting with 0·3 g. If patient was kept in bed the dose was increased to 0·45 g., but if the patient was treated as an out-patient the 0·3 g. dose was not increased.

LIVERPOOL MEDICAL INSTITUTION.

At a pathological meeting held on Nov. 19th Mr. W. A. Thompson read a paper on

Pyloric Stenosis of Infants.

He gave a short résumé of the various opinions held on the pathology of the affection, and explained how even when the condition was present at birth it failed to give rise to symptoms immediately because the pylorus was still unobstructed; later, under the influence of feeding, retention occurred; this caused enlargement of the mucosa, which further closed up the pylorus and induced added spasm. This increased the hypertrophy and the vicious cycle thus created brought about pyloric obstruction. The time required for this sequel of events varied from a fortnight to a month. According to the severity of the obstruction so the symptoms varied. The mild cases should be treated medically, the severe cases operated upon at once; whilst he advocated early operation on all moderately severe cases, since by this means an anxious period from 6 to 16 weeks was eliminated and the child was operated on when it was in the best physical condition. He was convinced that if this were done the mortality from this affection would be very small, as the majority of medical and surgical deaths came from this group. He described Ramstedt's operation and emphasised the importance of giving saline intraperitoneally. Ether was the anæsthetic used at his operations. He had performed Ramstedt's operation on 21 occasions with 19 recoveries. The two deaths occurred in greatly debilitated children.

Numerous specimens were shown, including a spinal cord tumour with lipiodol injection, by Prof. John Hay and Prof. R. E. Kelly; an acoustic tumour removed without facial paralysis, by Dr. Henry Cohen and Prof. Kelly; carbolic acid gangrene of finger, by Mr. Ashcroft; carcinoma of a reascended testis by Mr. Frank Jeans; and simultaneous chorion-epithelioma and adenomyoma of the uterus, by Dr. A. A. Gemmell.

Stirling Royal Infirmary.—A new infirmary is to be erected at a cost of between £70,000 and £80,000, the existing building having become insufficient. A site of 15 acres has been acquired for £5200; the building fund now exceeds £52,000.

Reviews and Notices of Books.

The Surgery of Pulmonary Tuberculosis.

By John Alexander, B.S., M.A., M.D., Assistant Professor of Surgery in the Medical School, University of Michigan. Philadelphia and New York: Lea and Febiger. 1925. Pp. 356. 21*s*.

"This volume," says Dr. Alexander in his preface, "presents the entire subject of the surgery of pulmonary tuberculosis with the object of acquainting the medical profession with the principles and practical details that will enable it each year to save thousands of lives which certainly will be lost if surgery is not undertaken."

Dr. Alexander does, indeed, present the entire subject, and in a most thorough and painstaking manner. His book is not a record of personal experience—personal experience is, in fact, entirely omitted—it is an epitome of the experience of all the surgeons and physicians in the world who have interested themselves particularly in thoracic surgery. He has condensed the world literature, and from the number of his references we may gather that he has extracted the pith of 500 books, papers, and personal communications; he has also weighed and summed up the value of recent advances and of the various efforts that have been made towards further improvement in technique. His book, which is a great achievement, was awarded the 1925 quinquennial Samuel D. Gross prize by the Philadelphia Academy of Surgery.

Dr. Alexander emphasises the great need for a fuller understanding and appreciation of the value of the surgical methods available to-day. He says, with truth, that "there exists to-day among many physicians and patients a hazy notion that the shock and mortality from the 'rib operations' are terrific, the post-operative pain scarcely endurable, and the permanent clinical success a rarity. They believe that the survivors, grossly mutilated and crippled, may only hope to drag themselves through a few extra years of burdensome life. That the notion is not based upon fact will be evident to anyone who is informed on present-day technic and results." Dr. Alexander has collected 1159 thoracoplasties done during the period 1918–25. The results of these have been as follows: "Cured," 26·8 per cent.; improved, 24·4 per cent.; died from causes directly or indirectly connected with the operation, 13·2 per cent. There are, out of 1159 cases on whom the major operation has been done, nearly 500 "cured" or *greatly* improved. This is a remarkable record in view of the fact that scarcely one of these patients was expected to survive his disease by continuing with artificial pneumothorax and sanatorium régime. The author deals thoroughly with the indications and contraindications for the treatment he advocates. Artificial pneumothorax is compared with thoracoplasty, their respective merits being well summed up. Claus's epigram is quoted (p. 97): "A good pneumothorax is better than a thoracoplasty, but a good thoracoplasty is better than a bad pneumothorax." The following operative procedures all receive consideration: extrapleural paravertebral thoracoplasty (Wilms-Sauerbruch and Brauer methods); paravertebral thoracoplasty of the upper ribs combined with phrenicotomy, phrenicotomy, extrapleural pneumolysis, intrapleural pneumolysis, drainage of tuberculous lung cavity, tuberculous effusion and empyema.

The book should be read by all interested in the treatment of pulmonary tuberculosis.

Internal Secretions.

The Personal Equation. By Louis Berman, M.D. London: George Allen and Unwin. 1925. With 7 plates. Pp. 303. 8*s*. 6*d*.

Everyone who read "The Glands Regulating Personality" will remember the gaiety with which

Dr. Berman pursued his thesis that we are mostly the product of our endocrines and that by personalities and temperaments we may best be classified as pituitarians, adrenalists, and so on. He urges the same views in the present volume which in substance does not add much to his first book. And some of the zest seems to have gone from his exposition. It may be that the ideas are now less novel and exciting, but we cannot avoid a suspicion that the author's thyroid (or is it his pituitary ?) may be beginning to fail.

A Text-book for Midwives.

Fourth edition. By **John S. Fairbairn**, F.R.C.P., F.R.C.S., Obstetric Physician to St. Thomas's Hospital. London: Humphrey Milford, Oxford University Press. 1925. With 3 plates and 113 illustrations, 5 in colour. Pp. 365. 25*s.*

THE author states in his preface that the alterations in the present edition are solely confined to those necessitated by the recent revision of its rules by the Central Midwives Board and by the issue of the regulations regarding the lengthened training which will shortly come into force. These rules are incorporated in the text wherever they apply and when necessary an explanation is given of their rationale. This is a commendable innovation which will prevent the pupil from learning these precepts by rote without understanding their practical application. The book as it originally appeared contained more than was necessary for the midwife. Since that time the period of training has been—or is shortly to be—quadrupled. Presumably a higher all-round standard of knowledge will be now required by the examining body, but this text-book will meet modern requirements in every way and will not need to be supplemented by larger works. Antenatal hygiene, the management of the lying-in woman, and the feeding of the infant are adequately dealt with from a practical standpoint. The last-named section is particularly useful and constitutes one of the best accounts of infant feeding to be found in any text-book of midwifery.

Aphasia.

Kritische Studien zur Methodik der Aphasielehre. By **E. Niessl von Mayendorf.** Berlin: S. Karger. 1925. Pp. 108. M.6.

Dr. Niessl von Mayendorf's latest contribution to the aphasia problem takes the form largely of destructive criticism. It is divided into three parts, dealing respectively with the methods of localisation of Prof. S. E. Henschen, the question of agrammatism, and the theories of Prof. G. Mingazzini. In regard to the first of these, Henschen's view, briefly, is that lesions of the lower end of the left ascending frontal gyrus produce dysarthria, not aphemia (Broca's motor aphasia); lesions of the posterior end of the third left frontal convolution (pars opercularis frontalis) produce motor aphasia. Von Mayendorf is at pains to collate and analyse a number of the cases relied on by Henschen and to endeavour to show they cannot possibly bear the interpretation put on them by the latter. The view he advocates is that since words are commonly aroused in the auditory speech areas, it is unnecessary to postulate a motor speech centre apart from these; the defect of speech of many lower frontorolandic cases is simply the result of interruption of the path from the auditory area to the motor centres for innervation of the speech musculature. Dealing next with agrammatism, the author criticises adversely the well-known views of the late Prof. Arnold Pick, and concludes that agrammatism is nothing else than paraphasia, or, rather, is no more than the syntactical form of paraphasia. He adopts the view that both dysarthria and agrammatism (paraphasia) are restitution phenomena which appear "after the first acute stage of amnesia verbalis kinæsthetica is over." Finally, the views of Mingazzini, that in the lenticular nucleus is a "centre" disorder of which produces dysarthria or anarthria, and that in the frontal centrum ovale just outside that nucleus and extending across and in front of the internal capsule to the head of the caudate nucleus is an area lesions of which cause word-dumbness, are submitted to analysis in the same way as in the case of Henschen's views—viz., by an independent scrutiny of the cases on which Mingazzini largely depends. The conclusion is reached that of 22 cases supposed to favour Mingazzini's theories, not fewer than 21 also showed right hemiplegia, whence it is argued that "lenticular" theories are entirely unnecessary.

The matter of von Mayendorf's monograph does not lose any of its impressiveness by the emphatic and forceful, not to say caustic, language with which the arguments are clothed. His own theories, it may be pointed out, are, in respect at least of the non-existence of a special motor speech area apart from the rolandic centres for innervation and of agrammatism, open to no little criticism themselves. But his communication serves a useful purpose in drawing attention to the complexity of many recorded cases from which authors have unjustifiably made deductions of a pleasing simplicity to support favourite views of their own.

Schistosomiasis vel Bilharziasis.

By **C. G. Kay Sharp**, Chief Medical Officer, Education Department, Province of Natal. With a Foreword by Dr. J. B. **Christopherson.** London: John Bale, Sons and Danielsson, Ltd., 1925. Pp. 74. 7*s.* 6*d.*

THE incidence of urinary schistosomiasis in Natal and Zululand is a high one—in school-children, for instance, it may be 13 per cent.—though the severity of the disease appears to be not so great as in Egypt. Contrary to the general opinion, schistosomiasis is not confined to the coastal belt, for several cases recorded in this booklet have been contracted 4000 feet above sea-level and 150 miles inland from the coast. The intermediary hosts of the schistosome in South Africa are *Phyopsis africana* and *Limnœa natalensis.* Few original views are expressed in this volume; the greater part is a compilation of the work of others and includes substantial quotations from popular text-books, while the section on treatment lacks such practical details as are required by the general practitioner. Not many of the illustrations are original. The absence of any scale showing the magnification of cercariæ is a defect, and the omission of a good illustration of the egg of *Schistosoma hœmatobium* is unfortunate. However, in directing attention of medical officers in Africa to the outstanding features of this disease and its method of spread a publication of this nature will serve a useful purpose.

The Sleeping Child.

Über den Schlaf des Kindes. By Dr. **Paul Karger**, Privatdozent for Diseases of Children in the University of Berlin. Berlin: S. Karger. 1925. Pp. 50. M.2.40.

A BRIEF introduction on the general characters of the sleep of the normal child, with its more or less normal periods of alternating quietude and movement, its depth and duration, and with an interesting discourse on the night movements of plants, animals, and man, is followed by a series of personal investigations of an objective kind on the sleeping child in health and disease. An apparatus resembling in part the familiar self-registering barometer was used, the recording point on the drum, which moved by clockwork at the rate of 4 cm. an hour, being connected up by a simple method with the framework of the bed or cot. Every movement of the child communicated a vibration to the bed which was thus recorded on the graph. A large series of these are reproduced in the book, and their comparison is instructive. The effect of various hypnotics and sedatives was also thus graphically measured. The method is practically useful and capable of extension.

COLLOIDS.

An Introduction to the Physics and Chemistry of Colloids. Fifth edition. By M. L. HATSCHEK. London: J. and A. Churchill. 1925. Pp. 183. 7*s.* 6*d.*

THIS well-known little book was first published in 1923, being based upon a series of lectures delivered by the author at the Sir John Cass Technical Institute. Until quite recently it was the only small English text-book upon the subject. Within the last few months some rivals have entered the field, but Dr. Hatschek's volume is far too well established to fear competition. The volume deals with colloidal chemistry as a whole, and provides a readable introduction to a complicated subject. The new edition has been brought quite up to date, and includes a lucid account of the work of Porter and Hedges on the vertical distribution of particles and more importantly of the recent work upon absorption. The theories of L. Michaelis, Freundlich, and J. Loeb are carefully considered; indeed, we find no omissions of any consequence and the balance is well maintained.

Laboratory Manual of Elementary Colloidal Chemistry. Second edition. By M. L. HATSCHEK. London: J. and A. Churchill. 1925. Pp. 153. 7*s.* 6*d.*

THE subject of colloidal chemistry is usually taught by means of lectures, with possibly a few demonstrations. The student hardly ever performs experiments himself; the difficulty of devising an adequate course may partly account for this lack of practical work. The object of Dr. Hatschek's laboratory manual is to provide a book of elementary instructions for practical classes; the course prescribed is well suited to the needs of elementary, general, and medical students, since the experiments are arranged so as to lead to a definite sequence of ideas. After an introductory chapter on apparatus, exercises on dialysis are described. Correct details are given for the preparation of dialysis membranes, and for the carrying out of a series of experiments upon typical colloids. The student is then taken through the preparation of typical suspensoid sols, suspensions, and other general properties. Ultra filtration, Tyndall phenomenon, and the electrical behaviour of colloids are dealt with in a series of simple illustrative procedures. The principles of absorption and the Liesegang phenomenon are also described with examples. Everywhere the accounts are accurate and instructive, and there can be no doubt that this book, which has now reached its second edition, is a worthy companion to the volume noticed above.

IMMUNO-CHEMICAL STUDIES.

Edited by CARL H. BROWNING, Professor of Bacteriology in the University, and Director of the Laboratory of Clinical Pathology, Western Infirmary, Glasgow. London: Constable and Co. 1925. Pp. 239. 12*s.* 6*d.*

THE objects of this volume are carefully defined in the preface by the editor, Prof. C. H. Browning; it is intended as a summary of the work of the Glasgow school upon the humoral aspects of immunity. Practically the whole of the information contained in the book has been published in various journals by the contributors. In many cases the articles are reprinted almost word for word, but the editor believes that their collection under one cover is likely to be appreciated by workers in this field. The volume opens with an introductory chapter by Prof. Browning upon antibody action in general. This consists of a summary of the general principles of immunity, and of the chemical basis of the reactions so far as known. The succeeding chapters consider in detail the factors of immunity, such as the properties of antigens and antibodies, opsonic action, and the final chapter deals with complement. The subject is difficult, and one which lends itself readily to confusion. In this volume, by means of careful classification and excellent summaries at the end of each chapter, the editor and contributors have kept the argument clear. The references are well selected and will be of great value to anyone engaged in immuno-chemical researches. The volume as a whole represents an admirable and laborious piece of work.

HYPERKINESIS.

Der hyperkinetische Symptomenkomplex und seine nosologische Stellung. By Dr. KURT POLISCH. Berlin: S. Karger. 1925. Pp. 92. M.6.

THE subject of this little volume is a synthetic and analytic study of cases of psychosis characterised by restlessness, inability to keep still, motor agitation, and hyperkinesis generally. A distinction is drawn between hyperkinesis in the sense of the neurologist—viz., chorea, athetosis, tremor, tic-like movements, and so forth, and the much more general character of the "psychomotility" of the author's psychotic cases. He alludes to the types of movement seen recently with some frequency after attacks of epidemic encephalitis, but concludes that in respect of them also a distinction should be made from the "pseudo-spontaneous" movements of his patients, which are more closely allied to those of some mental defectives—dancing and rotatory movements, pacing up and down, and so on. The essential difference resides in the fact of the hyperkinesis being accompanied by unmistakable psychotic signs, such as amnesia, mental confusion, hallucinations, and being therefore psychogenic in origin. Out of a large series of cases two main groups are separated: (1) those in which hyperkinesis was the major symptom and in which only one attack occurred; (2) those in which recurring attacks took place. Ætiological evidence is adduced associating the phenomena in many instances with infections. The author concludes that the hyperkinetic psychosis, so to call it, occupies a position midway between the exogenous and the endogenous psychoses; however this may be, he has clearly made out a case for the further study of this interesting clinical type on the basis of the peculiar character of its intrinsic features.

AMERICAN ILLUSTRATED MEDICAL DICTIONARY.

Thirteenth edition. By W. A. NEWMAN DORLAND. London and Philadelphia: W. B. Saunders Company. 1925. Pp. 1344. 37*s.* 6*d.*

THE preface to this revised and enlarged edition of Dr. Dorland's admirable dictionary states that since the last edition appeared there has been no "let-up" in the appearance of new terms in medical literature. Some 2500 new words have been added, several hundred of them from the terminology of dentistry, which seems to be going apace. Certainly, no medical word in current use, however new, seems to be missing from the dictionary, and the few omissions, which we have noticed in previous editions, have been made good. We are especially glad that the great scientific repute now associated with the name of Banting has at last led the compiler to admit that the Banting of the anti-fat diet was an undertaker (the word used is "coffin-maker") and not a physician. Pseudo-coxalgia is now included with a cross-reference to its various synonyms. Curiously enough, the confusion in regard to the several bearers of the name Schwartz(e) and their operations remains unresolved. Perhaps the word "stent" of the new prosthetic surgery might deserve admission. Stent was, we believe, an American dentist who invented a plastic material for taking impressions, a resinous compound which sets very hard; the word is now used to mean the impression itself, and in plastic work denotes a little mould used to hold a graft in place. In spite of the vast area of knowledge covered—there must now be more than 50,000 definitions and 120 tables—the dictionary remains of moderate size and pleasant to handle. In this its latest form "Dorland" will retain its old friends and find many new friends.

NEUROLOGICAL STUDIES.

Études neurologiques. Deuxième série. By GEORGES GUILLAIN, Professor of Clinical Neurology in the Paris Faculty of Medicine. Paris: Masson et Cie. 1925. Pp. 360. Fr.26.

WHEN the first series of these studies appeared in 1922 it was favourably reviewed in our columns, and general comment was then made on the advantages of the clinico-pathological method as practised by the French school with conspicuously good results ever since the days of Charcot. Prof. Guillain follows worthily in the succession of Maîtres whose labours combined to raise the repute of the Parisian school of neurology to its present high level. In this volume he pursues the same method of precise clinical examination correlated with equally careful pathological research. Among his papers herein collected are many of which the neurologist has already taken note; 40 in all, they range over the whole field, and include the description and study of the phenomena of a new reflex, the medio-pubic reflex; a case of callosal tumour (splenium) of an unusual kind; a series of communications on disseminated sclerosis and on Parkinsonian cases; and numerous others too varied to specify in detail.

While some are quite brief they are none the less informative; the majority date between 1922 and the present year, though a few belong to an older period. We hope that Prof. Guillain will continue to furnish the neurological world with similar essays, in which the graceful style of the author is used to impart valuable information of abiding interest.

JOURNALS.

BRITISH JOURNAL OF SURGERY.—The October issue opens with Sir D'Arcy Power's eighteenth Eponym on Thomas Bryant's ilio-femoral triangle and its diagnostic value.—R. Lawford Knaggs, in a series of able Hunterian lectures, has added very considerably to our knowledge of those bone diseases grouped around osteitis fibrosa. This issue contains his lecture on osteitis deformans, and having described its clinical picture and its histology he shows how close is the relationship between Paget's disease, osteitis fibrosa, and osteomalacia. —E. Rock Carling and J. A. Braxton Hicks contribute a paper on two cases of cyst-adenoma of the pancreas, one an operation case and the other found post mortem.—H. P. Winsbury White discusses the pathology of hydronephrosis, particularly of the pelvic type, and suggests that most of these cases have an underlying inflammatory cause.—F. G. Bell completes his survey of the pathology of the tumours of the testicle with a description of the carcinoma group.—Lymphaticostomy in cases of bad peritonitis is the subject of two papers by C. Hamilton Whiteford and Arthur Cooke. Though short, each paper makes it clear that this method of treatment is by no means satisfactory, nor is it clear that the original experiments in dogs on which it is founded can be proved correct.—The longest and by far the most important contribution is a Consideration of the Hypophysial Adenomata, by N. M. Dott and Percival Bailey, with an introductory note by Harvey Cushing. Their work is based on 162 cases of these tumours and is a brilliant example of the value of correlation of the clinical and histological findings. They give an exact description of the different types of tumour—the chromaphil and chromophobe adenomata and the mixed ones. It is found that the chromaphil group give acromegaly, while the chromaphobe produce hypopituitarism, and the mixed type show a mixed clinical syndrome. The authors have put the treatment on a rational basis for the first time.—F. R. Brown reports a case of a right duodenal hernia successfully operated on, thus giving the fourth recorded recovery.—B. C. Maybury and S. C. Dyke record two cases of urinary papillomata which spread by implantation, one in a hydronephrosis which resulted from the primary operation, and the other in three separate places in the abdominal wall after a suprapubic cystostomy.—The following rare or obscure cases are reported: 1. A Strangulated Femoral Hernia in Association with an Appendix Abscess in a Hernial Sac, by Norman Hodgson. 2. Two Cases of Hernia Through the Transverse Mesocolon, by F. S. Heaney and G. C. E. Simpson. 3. An Unusually Large Tumour of the Breast, by W. E. Tanner.—Section 2 of the Pathological Atlas contains further examples of the malignant diseases of bone, and begins the benign series with the chondromata.

A Liverpool surgeon writes to point out that Mr. F. T. Paul's "Selected Papers" were published not by "the surgeons to Liverpool Royal Infirmary," but by "the surgeons of Liverpool." The list of subscribers includes the name of every surgeon and assistant surgeon of the Liverpool voluntary hospitals.

PROCEEDINGS OF THE ROYAL COMMISSION ON NATIONAL HEALTH INSURANCE.*

(*Continued from p. 987.*)

Provision of Extended Medical and Allied Services.

(App. CIII. and Q. 23830–24024.)

Mr. L. G. Brock, C.B., and Dr. Smith Whitaker, on behalf of the department of the Ministry of Health concerned with the administration of medical benefit, attended before the Commission to answer questions arising out of the evidence of various witnesses. They presented a memorandum of discussions on certain of these questions which took place at five conferences convened by the National Health Insurance Commissioners in 1919. These conferences were held not only with the recognised representatives of insurance practitioners, but with various consultants and specialists, some of whom were nominated by the Joint Committee of the Royal College of Physicians, London, and the Royal College of Surgeons of England, and the Society of Medical Officers of Health, which had been conferring with the Government as to the working of the Ministry of Health Bill.

Grants had been voted by Parliament in 1914 for extra services in connexion with the insurance medical service and included provision for a service of medical experts, general practitioner clinics, laboratory services, &c. These grants were suspended owing to the war, and the conferences of 1919 were convened partly in view of the possibility of the revival of such provisions and partly because of the prospective early constitution of a Ministry of Health.

In the memorandum the question was examined of the possibility of some provision under the control of a public authority of the services under the following heads: (1) expert "out-patient" medical services; (2) ancillary services of skilled persons not medically qualified—e.g., nurses and masseurs; (3) general practitioner clinics; (4) referees and supervisory medical officers; (5) laboratory facilities; (6) treatment in residential institutions (as in-patients).

Under the first head questions of the necessary limitations both as to the range of service and the persons to whom it should apply were examined and also the nature of the checks which would have to be imposed to prevent excessive demands. It was recognised that the medical personnel of such a service would have to be selected and that remuneration would have to be on a time basis. The chief purposes for which general practitioner clinics might be set up were indicated to include joint surgery accommodation, facilities for second opinions and for special study, and also subsidiary centres at which treatment might be given by specialists attached to the clinics.

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* References to the paragraphs in the printed statements issued as appendices to the reports of the oral evidence are given thus: "App. X. 69," and references to the oral evidence thus—Q. 1369.

The object of the discussions having been expressly stated to be the free exploration of the important subjects discussed and not the formulation of or agreement upon any definite proposals, no definite recommendations emerge, but it may fairly be inferred that those taking part in the conferences were satisfied as to the practicability (if financial considerations permitted) of setting up public services of the kinds referred to.

Specialist and Consultant Services.

Mr. Brock was asked whether an extension of medical services, as urged by witnesses, to include a specialist and consultant service was desirable, if the necessary funds were forthcoming, and, if so, how such a service could best be provided. He said that there were several reasons which made some extension very desirable if funds were available. The out-patient departments of the hospitals did not cover the ground; there was not sufficiently close touch between the general practitioner and the hospital specialist; and thirdly, such a service would have a valuable educative effect on the general practitioner.

As to the method, it was thought that the service would best be secured by the provision of consultant centres at which specialists in different subjects would attend, payment being made on the basis of so much per session. Such a system would also allow of arrangements being made to provide at those centres ancillary services such as treatment, massage, electrical treatment, and radiography. Where the patient was well enough to travel to the centre it would ordinarily be much more economical to pay for his conveyance than to pay for the conveyance of the doctor. Where a domiciliary visit was asked for, probably in the great majority of cases all that would be required would be a visit by an experienced general practitioner, the type of doctor who would normally be called in by his colleagues in the locality in any case of difficulty.

A rough estimate of the cost of this service was 2*s.* a head of the insured population, to include provision for domiciliary attendance, or about £1,250,000 for England and Wales, including about £100,000 for laboratory services for aids in diagnosis. It was not thought that a system based on contracts with the hospitals would work satisfactorily, but it would be very desirable to utilise hospital premises by renting them wherever possible. The utmost importance was attached to communication between the general practitioner and the consultant.

Treatment of Dependants.

Mr. Brock said that if a complete medical service, short of institutional treatment, were going to be provided for insured people, it must emphasise the anomaly that at present their wives and dependants can only obtain such medical treatment as they are able to pay for. It seemed, however, open to question whether an insurance system which left a good many sections of the population out of account was the best way to provide for the case.

> If it was proposed to provide either a general practitioner service or a complete medical service for the whole industrial population, there are strong arguments in favour of providing this service out of local funds and making it available to all sections of the population who desire to take advantage of it. . . . If such an extension of State or municipal medical service is contemplated, then the whole basis of payment and the method of organisation of that service would require to be reviewed.

The contingency appeared, however, too remote to call for any detailed examination.

An Income Limit for Manual Workers.

With regard to the British Medical Association's proposal that a limit of income should apply to manual workers, the witness pointed out that insurance at the present time depends not on total income, but on rate of remuneration; the distinction was very important, because the rate of remuneration is something which is ascertainable now, but total income is something which is only ascertainable in arrear. He said that to apply an income limit to manual workers the majority of whom are necessarily subject to the risk of unemployment, would in the Ministry's view be a quite unworkable scheme.

Hospital Provision.

Mr. Brock said that if out-patient departments were, in fact, providing, except in emergency, for cases falling within the competence of the insurance practitioner, they had only themselves to blame.

> But there is ground for believing that indirectly the Insurance Acts have increased the demand on the hospitals, because the institution of a general practitioner service has, I think, to a large extent broken down the old dread of entering a hospital, and has led to a demand for operative treatment at a much earlier stage than used formerly to be the case.

In the view of the Ministry it would not be desirable to attempt to include institutional treatment in the Acts as a statutory benefit. To provide the whole cost of in-patient treatment of insured persons would be extremely costly, and there is the difficulty that a statutory benefit implies some guarantee that the required accommodation will be available when it is needed.

> Any scheme which resulted in preference being given to a particular class, however large that class might be, must in our view be prejudicial to the voluntary system. The voluntary hospital appeals to everybody at present, because at present in theory it is available to everybody.

With regard to the pressure on the bed accommodation Mr. Brock said:—

> The amount of avoidable suffering and of unnecessary claims on the sickness benefit funds, of course, cannot be calculated, but it is safe to say that in the aggregate it is very considerable, and a more effective use of the bed accommodation already existing in Poor-law hospitals is urgently needed both as a matter of economy and even more as a matter of humanity.

It would, however, certainly not be safe to say that this would make up the deficiency in the provision of beds, partly because the vacant Poor-law beds are not always in the area where the demand is greatest.

As to the standard of equipment in the Poor-law infirmaries, Dr. Smith Whitaker said:—

> I am immediately responsible for the work of the medical officers who inspect the Poor-law infirmaries, and while I have not gone into the matter closely, I certainly have not gathered from their reports that there is such a low standard of equipment of Poor-law institutions, taking them generally.

(To be continued.)

DONATIONS AND BEQUESTS.—Mrs. Martha Sarah Gatfield, Ross, Herefordshire, who left £6808, bequeathed one-fifth thereof to the Hereford Hospital and the London Hospital.—The Manchester Public Health Committee have adopted a recommendation to contribute £1000 for the work of cancer research in the city.—Mr. Henry George Hill, Bristol, ironmaster, who left £293,893, bequeathed £1000 to the Bristol Royal Infirmary, and £500 each to the Bristol General Hospital and the British Benevolent Institution.—Mr. Robert, Killaloo, Londonderry, besides other bequests, left £1000 to the Londonderry Borough Infirmary. After other bequests he left the residue of his estate as to one-third to the Londonderry County Infirmary and one-third to such charitable institutions as the trustees of his will may determine.—The trustees of the late Colonel John Barlow, of Bury, have given £4000 to Preston Infirmary, especially for the accident ward, in view of the fact that the institution is called upon to take into account cases from a much wider area than that from which it draws its funds.—During the past month the Royal Manchester Children's Hospital has received a legacy of £1500 from the late Mr. William Henry Armitage, and £341 from Queen Alexandra flower festival.—Mr. Joseph Harriman, Leicester, left £500 to the Loughborough and District General Hospital and Dispensary, and £500 upon trust for the poor and infirm people of the parish of Shepshed.—Mr. James Chapman, manufacturer, Sheffield, who left £40,146, directed that, after certain bequests, the residue of his property be given as to two-eighths each to the Sheffield Royal Infirmary, the Sheffield Royal Hospital, the Jessop Hospital for Women, and one-eighth each to the Sheffield Free Hospital for Sick Children and the Blind School, Manchester-road.

THE LANCET.

LONDON: SATURDAY, NOVEMBER 28, 1925.

THE DEATH OF QUEEN ALEXANDRA.

The death of the Queen-Mother at Sandringham House on Nov. 20th has left its impression in every home in the country, for the Danish Princess who came to England 62 years ago to wed the Prince of Wales had identified herself more than any royal person had done before with the life of the common people. Owing to the spread of wireless equipment her progress was followed from hour to hour by a populace for whom she had become the embodiment of beauty and gracious service, and the wireless announcement of her death produced a spontaneous outburst of sympathy for the King and the Royal Family.

Sympathy for others was an outstanding feature of Queen Alexandra's nature, and these personal experiences did much to divert her genuine philanthropy into practical service. Her determined and unflagging efforts to alleviate and prevent misery continued throughout her long life, and the names and records of countless institutions commemorate the share she took in the work for which the nation constantly thanks the Royal Family. Her contribution to the efficiency of military nursing was in itself notable. At the beginning of the South African War the astonishing influence of Florence Nightingale had not yet borne its full fruit, and the War Office did not provide anything approaching a suitable equipment of nurses for the front. Had it not been for the voluntary work of civilians the conditions in South Africa would have been even worse than they were, and in this work the Princess of Wales took an important part. Realising that unreadiness was causing much preventable suffering and endangering lives which should be saved, she was beforehand with the War Office and insisted upon a substantial contingent of nurses being sent out from London hospitals to South Africa. Not only was the nursing of the wounded during the campaign placed on a more satisfactory basis, but both the country and the Army were awakened to the need for reform and better organisation.

The war was no sooner over than Queen Alexandra's Imperial Military Nursing Service was established to provide primarily for the nursing of sick soldiers in time of peace and, also, to form the basis of a larger organisation in time of war. To this was added a reserve service as the first means of expansion in the hour of need. Later there was set up Queen Alexandra's Army Nursing Board to which is committed the oversight of the entire military nursing service, and in 1921 Queen Alexandra's Military Families' Nursing Service was started to look after the welfare of the wives and children of Service men. Similar Queen Alexandra Nursing Services were established for the Navy and for India, and immediate descendants of these organisations are the Nursing Services which have been created for the Air Force and the Territorial Army. In all of them the Queen-Mother took the keenest personal interest, and she had an active part in the details of their establishment. But these are not the only positive achievements in the realm of nursing that the country owes to the eager alertness of a mind at once profoundly benevolent and essentially practical. It was at Queen Alexandra's instance that the Finsen light was brought from her native land to the London Hospital. She gave the hospital the first lamps and so was the means of introducing into England that cure of lupus by light which might otherwise have tarried. Her work for the London Hospital, of which she was President for the last 21 years of her life, was both public and private. To the full she used the healing touch that Royalty still possesses. She would go to Whitechapel at very short notice, and delighted to walk through the wards and chat with the patients, her face irradiated by sympathy and by the friendly smile which meant much to those whose share of pity and sympathy had often been small. To the nurses she was an equally welcome visitor. She realised the nature of their trials and fatigues, and it was often said that she would herself have made an excellent nurse. The number of hospitals, nursing and charitable institutions in which Queen Alexandra took a more or less direct interest was great, and it is not surprising that her name should have been attached to curative institutions in such widely sundered lands as Canada and Burma. "Alexandra Day" is certain to keep her name fresh in the hearts of future generations who will erect the worthiest memorial to her, and that which she would best have appreciated, by continuing and enlarging the help to hospitals and other charities which flows from this annual expression of England's affection and reverence for the best beloved of all her adopted daughters.

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A NEW JOURNAL OF EUGENICS.

It is now more than 30 years since the appearance of the first of the series of memoirs in which Prof. Karl Pearson has proved what valuable service the mathematician can perform in the general field of biology. At the beginning of this period, such researches—sufficient to occupy the whole time and establish the reputation of most men—were the parergon of a teacher and active investigator of applied mathematics, but, for the past 16 years, as first Galton Professor of National Eugenics, Prof. Pearson has devoted the whole of his energies to the invention and application of exact quantitative methods to the study of biological problems, above all of the problems of human biology. Much of the gigantic output of himself and his pupils has, naturally and rightly, been methodological; the equipment of a factory must come first. Many of these methods have been invaluable to workers outside the biological field, but they were devised for biological ends, and in no year has the Galton Laboratory failed to produce results as well as methods.

The tools of this intellectual factory are now so numerous and so sharp that its manager feels justified in making new provision for the distribution of output. The *Annals of Eugenics*, the first two parts of which have recently appeared,[1] will be devoted wholly to the scientific treatment of racial problems in man; bibliographical matter will be reduced to a minimum, no other topics than the problems of race in man will be dealt with, and the papers published will be the work of trained scientists. It is to be expected that a majority of the papers will be statistical, but that good papers which are not

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[1] Vol. I., Parts 1 and 2, October, 1925. Pp. 256, with four plates. Francis Galton Laboratory for National Eugenics, University of London. 35s.

"mathematical" will not be excluded is shown by the inclusion in the first issue of an interesting pedigree of Epicanthus and Ptosis, the work of Dr. C. H. Usher. Mr. Anthony Hill contributes a study of the movements of the birth- and death-rates in England and Wales since 1838, and in Sweden since 1749, which shows that the inter-connexion of these rates is a much more difficult thing to interpret than some enthusiastic neo-Malthusians would have us believe. In fact, he says, "taken as a whole the evidence is that, apart from the secular trend, there has been but slight connexion in either country between the death-rates and the birth-rates closely following them, over the period of time for which the statistics are available." The bulk of the number is devoted to two memoirs (each to be continued), one by Prof. Pearson and Miss Margaret Moul on the Problem of Alien Immigration into Great Britain, illustrated by an examination of Russian and Polish Jewish children, the other by Miss Ethel M. Elderton on the Relative Value of the Factors which Influence Infant Welfare, based upon data provided by the medical officers of health for Rochdale, Bradford, Blackburn, Preston and Salford. In the former memoir the question is posed whether it is expedient to permit unrestricted immigration of aliens into this crowded land unless they possess some racially desirable character to a degree above the average of our own population. A thorough investigation of school-children leads to the conclusion that Jewish immigrants from Eastern Europe do not fulfil the postulated condition. Miss Elderton's equally careful study of the medical officers' data leads to the conclusion that purely environmental factors are, as a whole, far less influential upon infant welfare than factors which are presumably inborn. These two memoirs are, we think, of a high order of merit, indeed worthy of their authors' scientific reputation; as high praise as can be accorded to any contribution to statistical science. Nobody who has not worked through such papers with a calculating machine beside him is competent to offer detailed criticism.

In their article on the Immigrants Prof. Pearson and Miss Moul have correlated a large number of pathological or quasi-pathological characters (condition of cervical glands, tonsils, ears, signs of tuberculosis, heart trouble, defective teeth) with intelligence. Most of the coefficients are insignificant and, they say, "to sum up we have not succeeded in finding any relation of real prognostic value between intelligence and such pathological characters as we have been able to measure." Robust anti-eugenists may regard this as an admission that Nature does not improve the racial average of intelligence when she uses tuberculosis, for example, as a means of selection, or alternatively that "intelligence" is not of racially important survival value. Perhaps the truth is that we have not such exact knowledge of the after-fates of school-children with pathological stigmata as we usually suppose. Continuous health records telling us what happens after the children leave school are a crying need. Perhaps the time will come when Prof. Pearson and Miss Moul can treat in the same detail school and adolescent populations. We conclude with one tiny caveat to Miss Elderton. Although, like all scientific statisticians, she warns us against assuming that causation and correlation are identical, she does sometimes use language that implies that correlation between cleanliness of home depends upon health of mother. "In Blackburn the delicate mother seems able to keep her home clean." May not "dirty homes" sometimes have meant conditions beyond the power of the most robust housewife to remedy? The dirty home may have been the antecedent rather than the consequent term. Dr. W. McC. Wanklyn's remark may be recalled: "Persons so placed may make some effort, and wear out body and soul in the process, or they may just sit down, as it were, and give it up; the task is too hopeless, too impossible for any human being. They lose heart, they lose hope, they lose self-respect. It is an oft-told tale, but none the less true. They become bankrupt both in money and in self-respect. That is one of the principal causes of the insanitary conditions found in houses let in lodgings." We are not quite sure that the argument of p. 143 really surmounts the difficulty.

We wish the new journal that prosperity which the merit of its first numbers should ensure and heartily congratulate the editors on its form and contents.

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HEALTHY GERM CARRIERS: LIBERTY AND THE LAW.

A grave problem of public health administration is raised by incidents like the recent outbreak of typhoid fever at Streatham, where 27 persons were infected by a woman milk-seller who, though herself healthy, was an unconscious germ-carrier. "We have no power to keep her in permanent isolation," said Dr. F. G. Caley, the Wandsworth medical officer of health; "she is actually a person in good health. All we can do is to prevent her going back to the milk business and handling any kind of food for sale." Even greater difficulty is suggested by a recently reported American case,[1] where a sailor on board a fishing schooner appears to have been the unconscious cause of six cases of typhoid fever amongst the crew. The man was not a food-handler at all. What powers would a medical officer in England have in such a case?

There are powers in our public health legislation for ensuring the notification of certain diseases and for preventing the spread of infection. There are well-known sections devoted to the limited purpose of protecting food-supply by restraining the employment of persons likely to spread infection. Local Acts often contain provisions which go still further, and sometimes compensation may be awarded to persons who, as sources of infection, are induced to give up their trade.[2] Specific references to the "carrier" are rare as yet in the general legislation of the country. Articles XIII. and XV. of the Public Health (Pneumonia, Malaria, Dysentery, &c.) Regulations of 1919 give certain powers to medical officers of health who suspect that anybody employed in preparing or handling food or drink for human consumption is "a carrier of dysentery infection" or "a carrier of enteric fever infection." They may notify the manager of the business that it is necessary to examine the suspected person, and the Regulations enjoin that everybody concerned is to give the medical officer all reasonable assistance. If the medical officer thus discovers a carrier of dysentery or enteric fever he may notify the carrier's manager and the carrier himself with a view to preventing his further employment in that business for a specified period. On receipt of such notice the person addressed must comply with its terms. These Regulations give the usual general powers for securing the treatment of fever cases in suitable hospitals, but there is nothing specific as to the isolation and treatment of the healthy carrier, nor do the Regulations apply to any carriers except those engaged in preparing or handling food or drink.

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[1] Public Health Reports, vol. xl., No. 42 (Oct. 16th, 1925).

[2] See, for example, S. 102 of the Wakefield Corporation Act of 1924.

Similar provision was made for Scotland in 1919, but two years later (as we noted at the time[3]) the Scottish Board of Health took a definite step in advance of England. It cancelled its provisions as to dysentery and enteric fever carriers and issued the Public Health (Infectious Disease Carriers) Regulations (Scotland) of 1921. These defined a "carrier" in relation to a particular infectious disease to mean "a person who has within himself the germs or other infective virus of that infective disease, but has no other sign or symptom thereof, and is certified to be a danger to others in terms of these Regulations." To make a man a carrier for this purpose in Scotland he must first be certified by a medical officer of health and one other doctor as dangerous by reason of the probability of his spreading infection. Certification is for three months, with power to re-certify on re-examination. On the carrier's side a fresh examination may be demanded at any time on giving notice to the medical officer, and there is a right of appeal to the Board. The important point is that, so long as anyone is a carrier of an infectious disease, the Scottish Public Health Act and the Regulations made thereunder apply to him as they apply to a person actually suffering from that disease. The effect is that, by the application, for example, of Sections 54–56 of the Scottish Act, if the carrier is without proper lodging or is so lodged that proper precautions cannot be taken against spreading infection, he can be removed to hospital and detained there; moreover, he incurs a penalty—though the maximum (£5) is trifling in comparison with the cost of an epidemic —if he wilfully exposes himself without proper precautions. The Scottish Regulations, however, stop short of compelling the carrier to undergo prescribed treatment. We must look overseas for a stronger lead. New South Wales, under her Public Health (Amendment) Act of 1921, made Regulations in 1922 which begin with a similar definition. "A carrier shall be any person having in his nose or throat, or in his excretions or discharges, germs of any infectious disease, although presenting no signs or symptoms of the disease." They provide for authenticating the presence of disease germs by bacteriological tests, and for compulsory medical examination of the carrier by a medical officer of health or authorised medical practitioner. They enact that carriers may be placed under medical surveillance, or isolated and detained if necessary to prevent the spread of infection. Anyone who has been formally notified that he is a carrier is forbidden to take part in the preparation, handling, or serving of food or drugs, or the handling of vessels or receptacles used for that purpose. Moreover, the carrier must obey such instructions as a medical officer of health or an authorised practitioner may specify, for such period as is directed. This last provision is indispensable. To know that a carrier has been tracked down in a district and that an eye must be kept upon his activities is something, but it is not enough. There should be power to isolate and treat him just as much as if he were an actual sufferer from the disease which he is liable to disseminate. The individual must put up with inconvenience in order that the many may not suffer through him.

There seems no reason why the Ministry of Health might not legislate along these lines by regulations issued under its existing statutory powers. Section 130 of the Public Health Act of 1875, which corresponds to Section 78 of the Scottish Act of 1897, is surely wide enough. But do we know the extent of the problem? Are carriers of fever infections in England to-day to be numbered in tens or in hundreds or in thousands? And, if special institutions are provided for their isolation and treatment, will there not be obstinate cases in which prolonged detention will have all the appearance of imprisonment for life? If this be so, the law courts will probably be inclined to say that the liberty of an outwardly healthy and morally blameless person is not to be taken away by mere departmental ukase, but that if Parliament intends the healthy carrier to be incarcerated Parliament must say so. Until there is something specific upon the statute-book judges can hardly be blamed for thinking more of habeas corpus than of *Bacillus typhosus*. Meanwhile, if it is true that healthy carriers cannot legally be segregated against their will, still less can they be subjected to compulsory surgical operation. It may be reasonably proved that operations (tonsillectomy, for example, in cases of diphtheria carriers or removal of the gall-bladder in cases of typhoid carriers) offer a fair prospect of cure. Even if it were enacted that healthy carriers must submit themselves to prescribed treatment, the question of surgical operations would require careful handling. It might strike the public mind as too suggestive of those advanced American States which (on paper, at any rate) adopt the eugenic principle of sterilising their degenerates. With the recent Streatham case fresh in its memory, this country might be willing to empower the detention of the healthy carrier till such time as he can be certified as innocuous, all medical and surgical facilities being offered him in order to expedite his cure and release. Some years ago several American States passed a measure for compulsory notification, examination, quarantine, and treatment (backed by fine, imprisonment, and liability in damages) in respect of venereal disease. This country has not shown itself ready to follow suit. One of those States (Iowa), as an alternative to quarantine, allowed the patient's release on bond of 1000 dollars on condition that he would not expose anyone to infection, would continue his treatment till cured, and would observe all rules and regulations prescribed. It was an interesting experiment, but in this country we shall do more by appealing to the good sense of our countrymen who have the misfortune to be germ-carriers than by exacting money bonds from them.

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[3] THE LANCET, 1921, i., 452.

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PUBLIC HEALTH ADMINISTRATION.

SHOULD the Rating and Valuation Bill now before Parliament become law, the Ministry of Health has stated its intention of reviewing the question of percentage grants to local authorities for health services. The new proposal, outlined in a letter addressed by the Minister to municipal authorities, is to devise a scheme by which a fixed grant covering a period of years is made to the local authority, to be expended upon whatever health work the authority chooses, provided that a recognised standard of efficiency is maintained. The same letter intimates the Government's intention to make one local authority responsible for the finance of each sanitary area; as it is, municipal finance may at any moment be upset by the activities of boards of guardians over which the council has no control. Expression is also given in the letter to the Government's conviction that if the total health and hospital provision in any area is to be effectively and economically worked, it must be handled as a whole by a single health authority. The Government scheme therefore proposes to institute a single set of local authorities in the various areas of local government with provision for coördinated action. These proposals bring one stage nearer the reform of the Poor-law in the sense of the Minority Report of the 1905–09 Commission.

ROYAL DENTAL HOSPITAL OF LONDON, SCHOOL OF DENTAL SURGERY.—The annual clinical "at home" was held at the Royal Dental Hospital on Nov. 21st, when about 80 patients attended. There were shown various conditions of clinical and scientific interest, including pathological conditions of the jaws, teeth, and associated parts; cases illustrating the relation of dental to general disease, cases of orthodontic interest and prosthetic cases. Mr. F. St. J. Steadman gave a very successful demonstration of regional anæsthesia and there was also a display of specimens, models, and X ray photographs. About 250 visitors were present.

Annotations.

"Ne quid nimis."

EXPERIMENTAL CANCER RESEARCH.

IN the twenty-third annual report of the Imperial Cancer Research Fund which we notice on another page, Dr. J. A. Murray, F.R.S., the director, refers to the publication in THE LANCET of July 18th, 1925, of the paper by Dr. W. E. Gye as the outstanding event of the year. He summarises Dr. Gye's conception of the ætiology of cancer in the following terms:—

> "The essence of Dr. Gye's conception is that malignant growth results from the concurrence of two factors—an ultra-microscopic microbe and an unstable chemical factor derived in his experiments from propagated malignant tumours of animals, and it would be erroneous to regard either of these factors, singly, as the cause of cancer. The direct evidence of this dual origin of new growths has so far only been furnished for the Rous fowl sarcoma and for a transplantable sarcoma of the mouse. For other tumours the evidence is indirect, cultures of these supplying the ultra-microscopic microbe, the specific unstable chemical factor being supplied by an extract from the Rous fowl sarcoma, in which species of animal the two injected simultaneously gave rise to progressively growing sarcoma. Injected singly, they are inert. The delicate racial and tissue specificity governing the transmission of malignant new growths therefore attaches to the labile chemical factor, and not to the microbe. One of the gravest objections to previous forms of the parasitic hypothesis of cancer is thereby met. These experiments have only been possible by the use of the propagated animal tumours which are sufficiently exempt from ordinary bacterial contamination, and it is a legitimate source of satisfaction to this Fund that their prevision in maintaining this material over many years, including the war period, should have received its due acknowledgment and reward.
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> "It is obvious that this dual conception of the ætiology and pathology of cancer, should it be confirmed, introduces a new orientation in every aspect of the cancer problem: statistics, epidemiology, causation, prevention, and treatment."

Dr. Murray states that the workers of the Fund have, at Dr. Gye's request, undertaken a critical repetition of his fundamental experiment, and he deprecates premature speculation and anticipation in view of the fact that the new problems are susceptible of direct experimental study. But we may perhaps be allowed to express the opinion that everybody interested in the cancer problem—and there are many—will look forward to the next annual report of the Fund with the keenest interest.

Of the work published during the past year two papers are specially referred to by Dr. Murray. It is now recognised that cancer of the skin can be produced at will in mice by repeated painting of a localised area of the skin with tar. If this is repeated over many months several times weekly about 70 per cent. to 80 per cent. of the animals will after five to nine months develop a typical skin carcinoma. Dr. Findlay has found that even the single application of hot tar may, in exceptional cases, produce cancer after a long period of time—about a year. The tar no doubt remained in the traumatised area for a prolonged period of time. But from the clinical point of view it is interesting to have an experimental demonstration that a trauma due to a single extraneous intervention may be responsible for the genesis of cancer. The second investigation referred to deals with the theory which has been propounded that cancer is due to a loss of nervous control over a group of cells. Malignant new growths are not efficiently innervated, if indeed they contain any nerves at all. The cells of the normal skin, on the other hand, are supplied with a very rich network of fine nerve-fibres. It has been suggested, therefore, that the origin of cancer is to be found in this difference; in other words, that normal cells become cancerous or, at least, predisposed to cancer when they escape for some reason or other from nervous control. This view was submitted to an experimental test by Dr. W. Cramer, who denervated an area of skin and then submitted it to chronic irritation by tar-painting. It was found that the denervated area responded to tar-painting by the production of tumours not more rapidly but much more slowly. It is clear, therefore, that absence of nervous control does not predispose to cancer. On the contrary, it seems to retard the genesis of cancer. It would appear from these observations that in the production of a tar tumour we are dealing with the effect of a chronic irritant not on the epithelial cells only but on the tissue as a whole. Owing to the fact that these experiments necessarily extended over many months and that during that time a gradual nerve regeneration took place in the denervated area it was not possible to determine whether a permanent absence of nerve control would completely inhibit the genesis of cancer. These results would appear to be in keeping with the regression or limitation of the growth of a cancer which has sometimes been obtained in man by denervation.

To the superficial observer it may seem remarkable that the production of cancer by the laborious application of tar should still occupy the time of investigators while acknowledgment is made of the revolution in cancer research introduced by the work of Dr. Gye and Mr. Barnard. It is obvious, however, that any new knowledge must be harmonised with what is already known, and furnish a rational account of the way in which cancer arises from normal tissues, before it can be recognised as an adequate solution of the problem of the ætiology of malignant new growth.

GASTRO-ENTEROLOGY IN SPAIN.

THE subject of special clinics and hospitals for special diseases is being discussed with increasing frequency in medical circles in this country, and a point seems to have been reached when the advocates of so-called all-round knowledge have come to defend with increasing vigour those portions of the human body whose study has not yet been seized from them by otologists, neurologists, dermatologists, cardiologists, urologists, and other specialists. The outcome is yet to be seen, but it has already become somewhat remarkable that special departments for diseases of the endocrine organs, the alimentary tract, and metabolic diseases are not to be found in London. Opinion may differ as to whether this is desirable or not. Advocates of further specialisation will, however, be interested in a recent Spanish publication which we have just received.[1] The Madinaveitia Institute at Madrid was recently created for the closer study and appropriate teaching concerning gastro-enterology, endocrinology, and the disorders of nutrition. It comprises a large out-patient clinic and 12 wards, where upwards of 400 severe cases are treated in the course of each year. The X ray and laboratory equipment are of the latest pattern, and the yearly reports contain matter of high scientific interest. The article on the surgical treatment of gastric ulcer, by Dr. Urrutia, contains a learned survey of the present opinion of surgeons in all countries on this subject, and it is instructive to note the growing interest in the operation of gastrectomy, and the increasing suspicion as to the ultimate value of gastro-enterostomy prevalent in Spain. Dr. Carrasco Cadenas has contributed an article on the diagnosis and treatment of diabetic coma, and his insistence on the diagnostic value of estimation of the alveolar CO_2 tension is sufficient proof of the deep attention being given to the subject. Dr. Cadenas is emphatic concerning the necessity of giving large and repeated doses of insulin during coma, and shares the scepticism of other authorities concerning the value of bicarbonate administration. The laboratory examination of cases with deranged gastric, pancreatic, or hepatic function is conducted by Dr. H. G. Mogena, who contributes three excellent articles to the annals of the Institute. By a special technique, carried out with the aid of the X rays, this observer has been able to introduce duodenal sounds with rapidity and precision, and calls attention to the facility with which the duodenum can in this manner be filled with barium and useful pictures obtained in cases where ulceration is suspected. He has also been able in many cases to demonstrate hepatic insufficiency by the delay in appearance in the bile of tetrachlorphenolphthalein after intravenous administration of that dye. Altogether the first volume of the reports of the Institute will be received with deep interest in this and all other countries where the progress of medicine excites sympathy.

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[1] Anales del Instituto Madinaveitia. By Drs. Urrutia, Carrasco Cadenas, Madinaveitia, and Mogena. Vol. I. Madrid: Editorial Paracelso. 1925.

BIOLOGY OF POPULATION GROWTH.

IT is an interesting fact, coming within the experience of most scientific workers at one time or another, that a conclusion on any subject reached by apparently unassailable logic often turns out to be erroneous when detailed practical experimentation is substituted for theoretical exposition. The common jibe of "armchair critic" indicates that this experience is not infrequent in other departments of life. In this connexion the overwhelming logic of some of the arguments put forward by Malthus are no exception, and the obvious difficulties attendant upon controlled population experiments over a long period of time are probably sufficient reason why so much of what Malthus taught is accepted by many of his unquestioning followers at the present day. Prof. Raymond Pearl is not one of these; his painstaking and laborious investigations into some of the problems of applied biology are sufficiently well known to demand great respect, for his writings and his ingenious work with flies for carrying out population experiments in a laboratory to some extent get over the apparent difficulties of putting Malthusian doctrines to a scientific test. It was the "compelling logic" of the argument that the prophesied increase in human population would be bound to lead to an increase in the sum total of human misery and wretchedness that first aroused his suspicions, and in a new book[1] he has carried his previous work a step further by analysing in considerable detail the course of population among the indigenous tribes in Algeria over a period of 75 years of recorded census history. As a result of this and of other work already referred to on the fruit-fly, and further investigations in the experimental population of hens, he has reached certain important conclusions. He first shows "that populations grow in size according to the same mathematical law that individual animals and plants follow in the growth of their bodies in size." Further, "human populations grow according to the same law as do the experimental populations of the lower organisms," and the trends of the birth-rate and death-rate amongst the Algerian natives have been what would have been expected on certain mathematical considerations as expressed in the form of a logistic curve. The evidence necessary to establish these conclusions represents an enormous amount of labour, but Prof. Pearl and his collaborators have gone further and endeavoured to establish the biological causes influencing the shape of this curve. Evidence is brought forward to show that both for the lower organisms and for urban populations of human beings density of population will adversely affect the rate of reproduction. The economic factors of wealth by indirect psychological and social effects tend to express themselves in the sexual activity of human beings, and through sexual activity in birth-rates. With all this evidence and with the certain fact before him that "the human population of the world is going on increasing for a long time to come," Prof. Pearl is beginning to feel very uncertain as to the "inevitable misery doctrine" to which at one time he appears to have adhered. He now maintains that this doctrine overlooks certain important facts. In the first place, the great increase in population of recent years in various countries, and in the world as a whole, has not led to such a marked increase in squalor and wretchedness and general unhappiness as would have been expected. "Even allowing for the misery entailed by the great war," he writes, "it is surely true that at no previous time in the recorded history of mankind was so large a proportion of the population on the whole so happy, and so socially and humanely well off as they are right now." The reason for this is said to be, first, in the orderly evolution of human knowledge; applied biology is still in its infancy, and "one hears no note of pessimism from the chemists." Secondly, the adaptive potentiality of the human organism appears to be largely ignored, and yet it seems to be the crux of the whole matter. The new situations beginning to arise by the threat of over-population will be met by adaptation to environment. Birth control Prof. Pearl defines as "an intelligent adaptive response to an environmental force, population pressure." Public health and hygiene are further examples of these adaptive processes already at work. The comparative optimism of Prof. Pearl's conclusions is perhaps the most striking feature of his latest work, and both his work and his conclusions demand close attention.

LIPIODOL IN BRONCHO-PULMONARY DISEASE.

REFERENCE was made in THE LANCET last week to certain advances in the use of lipiodol in cerebral localisation. In the present issue Dr. Carlos Heuser, of Buenos Aires, describes his application of Sergent's method to the diagnosis of early pregnancy and to find out whether the Fallopian tubes are patent. But this is not all. Recent work in Canada indicates that in the diagnosis of broncho-pulmonary affections there is opening up an extended field for the use of this iodine-containing oil. Introduced first in France by Sergent and Cottenot for radiological investigation of bronchiectasis, and described first in this country by Armand-Delille and A. Moncrieff,[1] lipiodol has been increasingly used for the diagnosis of this particular disease, while a warning against its possible adverse influence on tuberculous lesions of the lungs has been uttered by the French workers. Dr. D. H. Ballon, however, in a recent paper,[2] points out that this theoretical objection, based upon the danger of pulmonary congestion from the iodine, has not been substantiated in his experience. Further, he maintains that the intratracheal route favoured by Armand-Delille and his co-workers, while perhaps justifiable in children, has no justification in the case of adults when a bronchoscope in skilled hands presents a much more satisfactory method. One part of a 20 per cent. solution of cocaine and two parts of 1 in 1000 adrenalin are used as a local anæsthetic for the pharynx and larynx, and bronchoscopy is performed on the radiographic couch. The instrument is passed beyond the vocal cords, and after further anæsthetising the operator injects about 30 c.cm. of warmed lipiodol through a long syringe. X ray pictures are then taken in various positions, the oil being moved by gravity to any particularly indicated part of the lungs. No discomfort appears to result from the lipiodol; the lung is remarkably tolerant, although there appear to be personal idiosyncrasies for the oil. No ill-effects have been noticed on tuberculous lesions, and lipiodol has been employed in certain cases described by Dr. E. Archibald in the same journal for determining the suitability of these patients for operative interference. Such surgical measures as thoracoplasty for the collapsing of cavities in the lungs are being undertaken more frequently, and the exact localisation of the extent and situation of such cavitation rendered possible by the use of lipiodol has an obviously important bearing on these procedures. In particular, in patients in whom such an operation as total posterior thoracoplasty has been performed, for example, two or three years previously, the new bone formation, irregularity of the chest wall, and thickening of the pleura render any subsequent ordinary radiogram of the thorax particularly obscure. If such a patient has a recrudescence of symptoms, as occurred in the three cases described by Dr. Archibald, accurate diagnosis is impossible without the use of lipiodol injection. This recent work is of importance in introducing a comparatively harmless method of injecting lipiodol and in establishing the fact that this oil is apparently non-irritant even to tuberculous lesions. The application of both these facts still further extends the use of this already useful substance.

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[1] The Biology of Population Growth. By Raymond Pearl. New York: Alfred A. Knopf. 1925. Pp. xiv. + 260. $3.50.

[1] Brit. Med. Jour., 1924, ii., 7.

[2] Canadian Medical Association Journal, October, 1925, p. 995.

ABDOMINAL LEVELS.

It is a commonplace of information, not only among surgeons and anatomists, but also among students, that the abdominal viscera are not always arranged within the cavity in absolute accordance with the simple plan that adorns all anatomical diagrams of the contents of the belly. We are not referring to the morphologically interesting examples of abnormal situation which are met with occasionally, but to what may be termed exaggerated lowness of levels with normal general arrangement. The transverse colon, placed in the pictures above the umbilicus, is more often found below—and well below—that point, and the stomach levels are no less striking in their variations. Anatomically, it would seem natural to give to these freely movable viscera a wide latitude in levels, associated with changes in the content of small intestine, and reserve narrow limits of "normality" for the colon on each side, where it is secondarily fixed to the dorsal wall. Among the interesting papers presented at the meeting of the Anatomical Society on Nov. 20th was one by Prof. R. J. Moody, who has been for some little time in this country. He had been able, by radiological methods, to estimate the position of the stomach, colon, and edge of the liver in 1000 students in California and, in demonstrating his results before the Society, showed how much these normal and healthy young people differed in respect to the positions of these viscera from what is usually accepted as the correct description. His material ranged in age from 16 to 25, male and female, and included athletes and gymnasts. None seemingly had any abdominal weakness or complaint. The average lowness of level of the organs mentioned, rather more marked among the women, would seem—even if all allowances are made for the conditions of X ray work on the one hand, and for those of the dissecting room subjects on the other—to call for the admission of much greater extent in range of level, and of possible lowness in individual level, than is generally conceded. The anatomists present appeared to have no objection to such conclusions. Radiologists have been instrumental in many ways in modifying some of the rigid conceptions held by the older school of formal anatomists, especially in the abdominal domain, but much more work and observation is required before the divergence of opinions in some cases can be reconciled. It is well that the formal anatomist should freely recognise the range of informality in the living body.

THE SURGEON IN BATTLE AT SEA.

In the *Military Surgeon* for October Rear-Admiral E. R. Stitt, the well-known Surgeon-General of the U.S. Navy, writes on the work of the naval surgeon in battle at sea. He opens with a story of the loblolly boy of the *Chesapeake* in her famous action. The loblolly boy was, in the British Service also, precursor of the sick-berth staff, loblolly being vernacular for the gruel he brought to the sick. After a glance at the medical preparations made by Augustus, as he became, at Actium, Admiral Stitt remarks that Hadrian's triremes (with a complement of 200 men) had each a surgeon, who received twice an ordinary officer's pay and hence went by the name of *duplicarius*. In the eleventh century barbers practised on board ship, and later Venice put surgeons and physicians in her galleys. In the wooden man-of-war the medical station was in a protected place below the water line. In those days British and Colonial ships-surgeons scalded their amputating knives, thinking by doing so to diminish the pain of the cut, and so anticipated Lister. In the Chinese-Japanese War the medical station was single, and it is on record that all the doctors and medical equipment of a ship were sometimes lost by a single shell explosion. Dressing stations were thereafter divided and put behind armour. The first "hospital for battle" was provided in the plans of the *Tsarevitch* in 1903. Admiral Stitt recounts the horrors of the defeat at Tsushima, when the ship *Askold* had one dressing station in the torpedo room, and two auxiliary stations, forward and aft, in charge of "feldshers," a word which recalls the "field shearer" or barber. Even at Jutland the ship's barber was among the ambulance party on *Seydlitz*. After reviewing reports of many recent naval engagements, Admiral Stitt concludes that two or more dressing stations must in future be available below the protective deck, and in the latest ships of the U.S. Navy a third is planned for the engine-room. Accessibility is difficult to attain now that ships are so much cut up into small sections as a protection against poison gas. For the same reason it must be possible to shut off the plenum ventilation without a moment's delay. A perfect stretcher for naval use is still wanting; Admiral Stitt mentions the Neil Robertson with approval, but in the future the wounded seaman may be removed on an ambulance aeroplane and the naval hospital ship come to resemble the aeroplane carrier. Every naval medical officer will be grateful to the Surgeon-General of the U.S. Navy, to whom we already are indebted for an admirable laboratory manual, for the picture he has given of life on shipboard in past times, and for his glimpse into the future.

NINETEENTH CENTURY SCIENTISTS.

Burns's well-known aspiration that we might see ourselves as others see us is one which workers in the field of natural science should bear in mind. There used to be a popular idea (it has nowadays almost disappeared) that science, as opposed to other fields of thought, was generous to fellow workers, was never dogmatic, did not know the meaning of heresy, and was ready to receive new ideas with open mind. This view of science was contrasted with the conventional views of religion, and the popularity of such "tenth rate" books (the epithet is Mr. Murray's) as Draper's Conflict between Religion and Science showed that this view had gained much ground. In the book [1] before us Mr. Murray, a parish priest, a widely read man, and by internal evidence a mathematician, pins out science in the nineteenth century on the dissecting table and sets out with cold precision the failings, the quarrels, the heresy hunts, and hidebound convictions of scientists to one another. His book is not pleasant reading, but, like many a bitter medicine, it should do good. The faults which Mr. Murray shows up so unsparingly may not be at present in evidence, but history shows that they are likely to recur. Sir Oliver Lodge, who has contributed an introduction to the book, gives the matter of it in a nutshell: "Surely the world of science is free from prejudice and is ever ready to welcome truth! So we try to think. But is it so? Does history bear this out?" Mr. Murray answers the question in the negative. He takes the lives and works of nineteenth century leaders in science—Jenner, Simpson, Lyell, Helmholz and Joule, Darwin and his predecessors, Pasteur and Lister, and a numerous band of others ("forgotten scientists" he calls them)—and shows how one and all met with bitter opposition or, still worse, with studied neglect from their fellows. Mr. Murray might have included in his list the John A. R. Newlands, who discovered and published papers on the Periodic Law, provisionally styled by him the Law of Octaves, some five years before Mendeléeff and Meyer, and whose work was received with derision. Occasionally one who had fought and conquered neglect or opposition to his own work (we forbear to cite instances), so far from profiting by discipline, proved just as bitter towards a new seer as any of his fellows. Mr. Murray's book is a store-house of information upon nineteenth century science; it is a work which should be read by everyone interested in human nature.

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[1] Science and Scientists in the Nineteenth Century. By the Rev. Robert H. Murray, Litt.D. London: Sheldon Press. 1925. Pp. 450. 12*s*. 6*d*.

POLYCYTHÆMIA RUBRA AND X RAYS.

WE publish in this issue of THE LANCET an interesting and suggestive note by Dr. S. W. Patterson, physician to Ruthin Castle, North Wales. He gives a clinical record of a patient suffering from polycythæmia rubra, associated with high blood pressure and blotchy non-pruritic rashes. The treatment adopted consisted of a lacto-vegetarian diet, the administration of 1 gr. of thyroid twice a day, and intestinal douching twice a week. X ray treatment to the long bones was given twice weekly, on 25 days for eight minutes each, during a period from July 4th to Oct. 17th, diathermy being applied to the hands and feet on the other four days a week. The treatment seems to have been dramatically successful, the red cells being diminished from over 7,000,000 per c.mm. to normal, and the blood pressure from a systolic level of 204 mm. Hg and a diastolic of 120 to normal, the improvement being associated with a marked sense of well-being. Nine months after treatment the improvement has persisted, the blood count still being normal. The condition of polycythæmia rubra is an extremely interesting and somewhat obscure one. Since the year 1923 when Osler first clearly defined the condition, after its previous description by Vaquez, Cabot, and others, a great deal of attention has been paid to it, and it is probably somewhat more common than it was originally supposed to be. A routine examination of the blood in patients with florid appearance and high blood pressure would probably reveal more cases in an early stage. The association of high pressure with polycythæmia has long been familiar, and a form was described by Geisböck as polycythæmia hypertonica. There are two special points of interest about Dr. Patterson's case. First, the persistence of the good results of the X ray treatment, and secondly, the remarkably good effect of this treatment upon the raised blood pressure. The first of these may possibly be due to the fact that the case would appear to have been comparatively mild in degree with only just over 7,000,000 red cells per c.mm., and thus possibly was discovered in an early stage. The beneficial effects upon the blood pressure support the suggestion made by Dr. Patterson that this method of treatment is worth trial in cases with high blood pressure apart from this disease, especially those associated with some increase in the red cells and heightened viscosity of the blood.

ROYAL SOCIETY OF MEDICINE.

THE annual banquet of the Royal Society of Medicine, held at the Hotel Victoria, London, gave its President, Sir StClair Thomson, the opportunity to set out something of the great part played by the Royal Society of Medicine in the life of the community. He described the Society as a guild for the diffusion of knowledge in the science and art of medicine, the gold being dug in practice, in hospital wards, in laboratories and museums, as well as garnered from the progress of neighbouring sciences; but it was, he said, the function of the Society to test this gold, to mint it, and to put it into circulation. He spoke of the developments likely to take place under the management of the new whole-time secretary, Mr. Geoffrey R. Edwards, B.A., who had already made arrangements for keeping the library open during the long vacation, and for making it available on two evenings a week up till 10 P.M. It is, as the President remarked, not only the chief medical library of its kind in the Kingdom, but the most complete medical library in the Empire. But he also took the opportunity of acknowledging once again the signal services of the late secretary, Sir John MacAlister, whose 38 years of ungrudging and loyal service came to an end in April last. It was during this period that the removal took place of the old Medico-Chirurgical Society from "two or three stuffy rooms" in Berners-street to a building in Hanover-square, followed by the federation of this Society with 17 others into the Royal Society of Medicine. In the last session, as he remarked with some pride, the Society and its sections held 171 meetings and discussions attended by 6800 members, while the library was visited by more than 20,000 readers, and 3054 parcels of books were sent carriage free to members in the provinces and abroad. Not that he was content with the present position, for he spoke enviously of the recent endowment of the New York Academy of Medicine with half a million pounds jointly by the Carnegie Corporation and the Rockefeller Foundation. This gift was enabling the Academy to maintain a bureau of clinical information and a committee for post-graduate medical education, enterprises both of which the Royal Society of Medicine would gladly undertake, should the means be forthcoming. Mr. Neville Chamberlain, the chief guest at the banquet, in proposing "The Royal Society of Medicine," spoke of the immediate need for the establishment of a post-graduate school in London, and bespoke the good will of the Society for this project. With the help of the committee over which he was to preside as Minister of Health, he thought that the difficulties which had so far baffled endeavours might be surmounted. At the conclusion of the banquet a portrait of Sir John MacAlister, by Mr. Eric Kennington, was unveiled by Miss Williamson, his assistant secretary, and the Jenner medal of the Society was presented to Dr. S. Monckton Copeman.

BERNHARD NAUNY

Bernhard Naunyn was for more than a generation one of the foremost leaders of medical research in Germany, but when he died in July last, at the age of 86 years, he had so long survived his co-workers, and, indeed, many of his pupils, that his death passed almost unnoticed. Naunyn qualified from the School of Medicine in Berlin, he began his long clinical career with Frerichs, one of the founders of the Clinic of Internal Medicine, and succeeded him as the leading exponent of this branch of investigation. In 1871 he founded with Schmiedeberg, at Berne, the *Archives of Experimental Pathology and Pharmacology*, in which his aim was to further the principle of making the clinic itself the arena where pathological questions were solved and applied. He held most emphatically that the problems of illness belonged to the clinician alone, and that although the clinician was indebted for help and method to the physiologists, pharmacologists, pathologists, and bacteriologists, he must be "master in his own house." He was only in Berne for a year, but during that short time he made many close friends, and remained a lover of Switzerland for the rest of his life. His next chair was in Königsberg, and in the year after he occupied it he contracted an ideally happy marriage with his cousin Anna, who survives him after inspiring his best work for 52 years. His time in Königsberg was the happiest and most fruitful of his life. Here he published works, that are now standard text-books, on the echinococcus, toxæmia, fever, and the effect of high altitudes on the hæmoglobin, and laid the foundations of all later work on diabetes and diseases of the liver. He worked from 1888 to 1904 in Strasbourg, and then spent the last 20 years of his life, a period when most men of his age are past work, in research on the colloid chemistry of the gall-stone. The reaction and diffusion of crystalloids and colloids in a colloid medium is at once one of the most interesting and one of the most difficult aspects of colloidal chemistry, and it was Naunyn who first showed that the "facetting" of a gall-stone was due not to pressure from outside, but to a chemical process. His mental acumen remained unimpaired to the last, and he was still equal to the most abstruse chemical problems when he died. He has been described as "a clinician body and soul." He knew that the ultimate application of medical science must be practical, at the bedside, and that science which could not be thus applied was not worthy of the name. As far as speculation solved problems or set them he was not averse from it, but had no use for it in itself. He was one of the most severely practical research workers that there has ever been. He disliked the whole field of modern psychotherapy, holding that to treat it as a separate study was misleading and dangerous, for it was an inseparable part of medical practice. His last published work, entitled "Thanks, Memories and Opinions," is ample proof that he was as good a critic as he was a clinician or an investigator.

Modern Technique in Treatment.

A Series of Special Articles, contributed by invitation, on the Treatment of Medical and Surgical Conditions.

CXLIX.—CHRONIC NASAL DISCHARGE AND SINUSITIS IN CHILDREN.[1]

Foreign Bodies in the Nose.

OCCASIONALLY a child pushes a foreign body into his nose without the parents' knowledge. If the object is hard or metallic—e.g., a bead or button—no trouble may arise until years later when a calculus has formed around it which causes obstruction, ulceration, and sanious discharge. On the other hand, when the object is soft or absorbent—e.g., sponge, paper, or wool—it soon becomes a foul purulent focus. The pus trickles from the affected nasal passage, excoriating the nostril, and the breath is fœtid. Headache, aural and other symptoms may also be present. Inspection generally reveals the foreign body, but if it is covered with pus, concealed by the swollen mucous membrane, or offers no resistance to the probe its detection may prove difficult. Under such circumstances, or if the child is young or intractable, a few whiffs of adrenalin solution (1 in 10,000) should be sprayed into the affected nasal passage and a general anæsthetic given. If chloroform is chosen no adrenalin should be applied after narcosis is commenced. A thorough rhinoscopic examination is thus possible, and with a probe search can be made beneath the inferior turbinate and in the upper parts of the nose. The body having been located should be extracted by means of nasal forceps, a hook, or suitably bent probe. All manipulations should be carried out as gently as possible in order to keep the field free of blood.

Chronic Rhinitis.

This term comprises: (1) Affections of the nose, in which the lining membrane has undergone chronic inflammatory changes. These are commonly caused by colds, influenza, the exanthemata, &c., irregularities of the nasal chambers, sinusitis, and adenoids. (2) The groups of nasal signs—the chief of which is hypersecretion—manifested by certain general diseases—e.g., early tuberculosis, intestinal toxæmia, nephritis, &c.

As a rule, when the intranasal changes are slight or absent the discharge is serous or mucous, and when pronounced, muco-purulent. A serous or seromucous discharge is an early sign of simple chronic rhinitis. At this stage of the disease the inferior turbinates swell unduly, causing partial nasal obstruction and secrete excessively, thus giving rise to snuffling and running nose. Colds are readily contracted and the discharge temporarily becomes muco-purulent. In the course of time the congested inferior turbinates undergo hypertrophy. Obstruction and muco-purulent discharge are then constant and the inferior turbinates, even after the application of cocaine, are flabby, especially along their lower edges and at both ends.

Chronic rhinitis is often associated with adenoids and tonsils. When these are removed before the stage of turbinal hypertrophy is reached, cure of the nasal catarrh generally follows. On the other hand, if permanent enlargement of the inferior turbinates has taken place, and is left untreated, the removal of the tonsils and adenoids will not free the child of its nasal symptoms. The frequency of these enlargements has so impressed some rhinologists that the recommendation has been made to reduce the inferior turbinates in every patient operated on for tonsils and adenoids. This is an over-estimate; nevertheless, inquiry should be made in all cases of adenoids as to symptoms of excessive swelling of the inferior turbinates—e.g., pronounced variations at short intervals in the patency of the nose, stuffing in the morning or in a warm room, which passes off on going out of doors, and blocking of one or other side of the nose from time to time. If nasal obstruction and hypersecretion occur independently of adenoids, the parents should be cautioned as to the harmful effects of overheated and close rooms, too little exercise, and too much food. The sending of a city-bred child to the country or of a boy to a preparatory school often dispels all nasal symptoms.

Intermittent obstruction due to turbinal congestion may be benefited, at least temporarily, by a camphor-menthol spray or ointment. A chronic discharge of mucus or muco-pus may be diminished or checked by a nasal wash. For this purpose a warm solution of bicarbonate of soda or common salt (1 drachm of either to one pint of tepid water) is effective. Elaborate formulas made up as powders, tablets, or solutions for the preparation of nasal washes may be found in the lists of manufacturing chemists, but it is doubtful whether these possess specific virtues. Their beneficial action probably is chiefly mechanical. The main requisite in a wash is that it does not irritate the nasal mucous membrane, particularly the olfactory epithelium, and so lead to blunting or loss of the sense of smell. Astringents such as alum and zinc salts are banned on this account.

When the discharge persists or recurs on contracting a slight cold, operative measures may be necessary. The shrivelling of the swollen inferior turbinates by the application of fused chromic acid or the galvano-cautery may suffice. If hypertrophy is established it may be reduced by scissors and snare. This should be done sparingly so that the turbinates may not be undersized when the nose is fully developed. The resection of a deviated septum should be postponed until the patient is at least 17 years of age.

One of the most intractable nasal discharges is that following scarlet fever; it is largely purulent. The inferior turbinates are not enlarged and their lining membrane is not thickened. Nasal washes are only of temporary assistance; mild cauterisation with solutions of chromic acid (10–50 per cent.) afford most benefit. Frequently the antra and several of the other accessory sinuses contribute to the discharge and demand treatment both on this account and because of the recurrent infections—e.g., pneumonia—to which they give rise. When a vasomotor disturbance exists in addition to the turbinal congestion, sneezing may be a pronounced symptom. The obstruction, rhinorrhœa, and sneezing are then usually paroxysmal in character—they set in suddenly, are severe while they last, and cease abruptly. In such cases protein sensitisation and nervous exhaustion must be investigated. When the former can be excluded benefit is most likely obtainable from a course of arsenic.

Some children suffer from a watery nasal discharge which may excoriate the nostrils and upper lip. No turbinal swelling or other intranasal abnormal condition is found. The patients are usually of poor physique and backward; they feel the cold readily, suffer from chilblains, and sometimes from enuresis. Thyroid extract and calcium preparations are indicated in such cases. A unilateral watery discharge is usually due to unequal patency of the nasal passages, especially from deviation of the septum. The discharge comes from the wider fossa when out of doors on a cold day. The application of the cautery or escharotics to the inferior turbinate on this side, unless it is much hypertrophied, is useless or even harmful, because a considerable amount of the discharge is not secreted by the turbinate, but is due to condensation of the moisture in the expired air. The proper treatment is to equalise the patency of the two sides, but when this involves the correction of the deviated septum operation must be postponed, unless the circumstances are exceptional, until the patient is fully grown.

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[1] An article by Dr. Brown Kelly on Chronic Nasal Discharge in Infants appeared in THE LANCET last week.

Sinusitis.

Anatomical investigations, post-mortem examinations, and clinical experience all go to prove that the accessory sinuses of the nose, even in early infancy, may be the seat of inflammatory and suppurative processes. The infection causing these comes oftenest from tonsils and adenoids, acute colds, measles, scarlet fever, diphtheria, and pneumonia. The commonest symptoms are nasal discharge, obstruction, and cough. Occasionally a severe local disturbance with orbital, intracranial, or other complications arises. In some cases the sinusitis is unaccompanied by local symptoms, but acting as a septic focus causes frequently recurring colds in the head, arthritis, nephritis, laryngitis, pulmonary affections, &c. Dean recommends that if after the removal of tonsils and adenoids, the usual improvement is not obtained, the child continuing listless, pale, with poor appetite, &c., and if, apart from the respiratory tract, the systemic condition is satisfactory, toxæmia should be suspected and search made for a septic focus in the nose or its accessory sinuses.

When the accessory cavities in infants and young children are under suspicion, radiographs should be taken in order to determine which sinuses are present, and their size. Unfortunately, this method in the young is not helpful in diagnosing disease, owing to the pictures of the cavities being ill-defined. The source of a purulent discharge may be discovered by inspection of the nasal fossæ, but oftener no pus can be seen. The pharyngoscope sometimes proves a useful aid. Exploratory sounding, aspirating, and washing may be employed when the sinuses are sufficiently developed. The ethmoidal cells and antrum are of chief clinical importance in the young, the frontal sinus of least. Usually several sinuses on the same side are involved.

The first step in treatment is the removal of the tonsils and adenoids. The improved ventilation which results is followed by the cessation of the sinus discharge in the majority of young patients. Nasal washes and instillations—e.g., argyrol 10 per cent.—should be used to reduce the swelling of the nasal lining membrane and so facilitate drainage of the sinuses. Outdoor life in a warm climate has a beneficial effect. Skillern has found vaccines of greater service in this class of sinus disease than in any other. The ethmoidal cells, frontal sinus, and antrum have been opened and drained in patients even under 3 years of age, but excepting in the case of the antrum such operations are rarely called for. When the patient is over 8 years the antrum can be reached from the inferior meatus and intranasal treatment carried out as in adults. Reference to a radiograph will usually show that this method is not applicable in younger children owing to the floor of the antrum being still too high in relation to the attachment of the inferior turbinate and that attempts to enter the cavity will endanger the rudimentary teeth. For the latter reason the canine fossa route also is not available.

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Special Articles.

GENERAL MEDICAL COUNCIL.

PRESIDENT'S ADDRESS.

THE winter session of the General Medical Council was opened on Nov. 24th, Sir DONALD MACALISTER presiding.

The PRESIDENT began by paying a tribute to the late Queen Alexandra, and expressed the wish of the Council that on a suitable occasion an assurance of the Council's respectful sympathy and deep regret should be conveyed to Their Majesties. Referring to the retirement, after 15 years' service, of Sir Isambard Owen, the President said that few men in the medical profession in this generation had done so much constructive work of an abiding kind in settling the framework and directing the policy of modern universities. His successor was Prof. Edward Fawcett, Dean of the Bristol Faculty of Medicine, whose distinction and experience made him a welcome member of the Council. The session would mainly be devoted to the hearing of charges against registered practitioners, which were brought before the Council as, in the words of Chief Justice Cockburn, "the tribunal to whom the legislature has left the decision, as being the best judges in the matter."

The Functions of the Council.

"Apart from cases of conviction in the criminal courts," continued the President, "the charges to be investigated allege conduct, which in the words of the Act constituting the Council is 'infamous conduct in a professional respect.' These words are sometimes misinterpreted and misapplied by persons ignorant of their history, sometimes even by advocates practising before this tribunal. It is therefore desirable in the common interest that, from time to time, their legal definition should be recalled. The legal definition was not framed by the Council, it was laid down for the direction of the Council by the Supreme Court, and it was prepared by Lord Justice Lopes, Lord Justice Davey, and Lord Esher, Master of the Rolls, in consultation. It is this :—

> If a medical man in the pursuit of his profession has done something with regard to it which will be reasonably regarded as disgraceful or dishonourable by his professional brethren of good repute and competency, then it is open to the General Medical Council, if that is shown, to say that he has been guilty of infamous conduct in a professional respect.

The Master of the Rolls added further :—

> The question is not merely whether what the medical man has done would be an infamous thing for any one else but a medical man to do. He might do an infamous thing which would be infamous in any one else, but if it is not done in a professional respect, it does not come within Section 29 [of the Act]. Yet, if in relation to his profession—that is, either with regard to his patients or to his brethren—he does that which may fairly be considered 'infamous conduct in a professional respect,' then I think it is within the Section.

"Within the jurisdiction defined by the Statute, according to the procedure laid down by the Lords Justices when giving judgment in certain leading cases, and in accordance with the definition of the technical term 'infamous conduct' furnished by the same authority, the Council performs its statutory duty as a 'domestic forum.' If swayed by fear, favour, or clamour the Council fails to perform any duty vested in it by law for the protection of the public, the Medical Acts themselves provide that the public shall not go unprotected. The Privy Council may issue its directions to the General Council to make good the default, and failing compliance, 'may exercise any power or do any act or thing vested in or authorised to be done by the General Council.' In other words, the Medical Council is a public department, with judicial functions defined by Statute and by the Courts, working under the supervision of the Privy Council, and subject to supersession by the Privy Council if it defaults. It is not vested with any powers or duties for the 'protection' of the medical profession, other than those implied in the preamble to the Medical Act, 1858—namely, 'That persons requiring medical aid should be enabled to distinguish qualified from unqualified practitioners.' For that purpose, which is obviously a purpose of public utility, the Register was set up. The Council's duty to the public is simply to ensure that no one who is not legally qualified by adequate professional training and testing shall get on to the Register, and that no one, who by his conduct has forfeited his claim to be entrusted with the status of a legally qualified practitioner, shall remain on it.

Privileges of Qualified Practitioners.

"The legal privileges of the qualified practitioner of medicine and surgery, as compared with the unqualified, are few. He has no monopoly of practice in either branch, such as the law confers on dentists and midwives in their specialties. The 'privileges' are rather trusts than advantages. Thus only the qualified can legally grant a valid medical certificate of illness or injury, or of death, or legally prescribe a dangerous drug for a patient. In many cases the attestation of a qualified practitioner is legally equivalent to that of a magistrate or a clergyman. These 'privileges' are clearly based on the assumption that members of a learned and honourable profession may be trusted to deal honourably. Whoever, therefore, abuses that trust by misusing the privileges his status confers, or by covertly enabling others for private gain to evade their legal disabilities, is chargeable with misconduct 'in a professional respect,' and makes himself liable to the penalty of removal from the Register. As the law stands, he is then as free to practise as if he had not been registered, and the public is as free to employ him, if they think fit. But the Council, as the guardians of the Register, have neither the power nor the responsibility of controlling his conduct thereafter. His status is that of an unqualified practitioner, and he is outside the Council's jurisdiction. . . .

"There are indications that, both within and without the profession, misunderstandings and confusions exist regarding the Council's functions and limitations. We are, for example, frequently confounded with voluntary organisations and societies of medical men, constituted for scientific and professional purposes, and subserving these purposes with eminent efficiency. These bodies are not, however, charged by statute with our duties and powers, nor we with theirs. We have no professional interest to serve other than the efficient performance of the specific duties laid upon us by the law in furtherance of the public welfare. . . .

Reciprocity.

"As regards Ireland, I have only to say that the Act of the Free State passed in February, 1925, which made the Medical Acts operative in Southern Ireland for one year, has been working smoothly so far as this office is concerned. We have had no official intimation from the Free State Government or from the Privy Council that the Act will be renewed next February. Unofficial communications from members of the Irish Branch Council, and others, indicate that indefinite renewal is improbable, and that conferences on the question are in progress between the Government of the Free State and a Committee representative of the Irish medical profession. Until the legislative proposals of the Government in Dublin for the future regulation of medical practice in Southern Ireland are known, it would be inexpedient for this Council to discuss the potential reactions of such legislation on medical education and registration in Great Britain and Northern Ireland. The Free State is autonomous within its own territory, and we must await the decision of its own Government and Parliament.

"The agreement for medical reciprocity with Italy," continued the President, "had been signed by Signor Mussolini and the British Ambassador, as plenipotentiaries, on May 21st, 1925. Certain difficulties of an administrative kind, which related chiefly to the documents to be furnished by British practitioners desirous of practising in Italy, had been satisfactorily overcome, and the cordial understanding regarding medical reciprocity, which subsisted between Italy and this country from 1910 until the promulgation of the recent Italian law on the subject, had been completely restored.

"The position taken up by the Province of Saskatchewan, by which it, in effect, denied to British practitioners registered here the privileges granted in this country to provincial licentiates, had been the subject of negotiation, and action by the Privy Council in regard to the discontinuance of the unreciprocated privilege of Saskatchewan at present remained in abeyance, in order that every opportunity should be afforded for reconsideration of the anomalous position created by Saskatchewan legislation."

[After referring to the appointment of Col. R. A. Needham as a visitor to Calcutta University and to the fact that the recognition accorded to the degrees of the University of the Punjab were to be continued for another year under the same conditions as before, the President continued as follows] :—

Revision of the British Pharmacopœia.

"The Pharmacopœia Committee is now in a position to proceed with its preparations for the revision of the British Pharmacopœia, 1914, which it has for some time been contemplating. Two recent events have cleared the way. The first is the passing of the Therapeutic Substances Act, 1925, by which Government machinery is provided, in association with the International Commission of the League of Nations, for fixing standards, &c., in relation to preparations requiring biological methods of testing. The second is the issue of the report of the International Conference on Potent Drugs, held at Brussels in September. At this Conference the Council was represented by Sir Nestor Tirard, who will report to the Pharmacopœia Committee its proceedings and conclusions. If the latter are accepted, with or without reservations, by the British Government, this acceptance will necessarily involve modifications, some of them important and far-reaching, in the text of the Pharmacopœia. . . . As the Pharmacopœia has by the nature of the case to serve the purposes of all the parts of the Empire in which it is current, it has to include within its scope a much larger number of drugs and preparations than would be deemed necessary for any one part. A given preparation may be thought obsolete or useless here, and yet be much in demand elsewhere. Any drug, in fact, which is (1) in current use over any considerable area, and (2) requires for the safety of the public that it should be exactly defined, in respect of source, preparation, standard of purity, &c., has a claim to admission. The modern freedom of international communication further makes it expedient that, in different countries, the same or equivalent names, especially in the case of potent drugs, shall mean preparations of equivalent strength and composition. In so far as this end can be attained by international agreement, the assimilation makes for public health and safety. All these considerations have to be kept in mind by the Pharmacopœia Committee; and it hopes, with the assistance which it has invited from authorities at home and overseas, and with the coöperation of its expert Committees of Reference, in the next issue to 'afford to the members of the medical profession and to those engaged in the preparation of medicines throughout the British Empire one uniform standard and guide, whereby the nature and composition of substances to be used in medicine may be ascertained and determined.'"

At the conclusion of the presidential address a vote of thanks to Sir Donald MacAlister, proposed by Dr. J. A. MACDONALD and seconded by Sir NORMAN WALKER, was passed by the Council, which then proceeded to the discussion of reports by the Dental Board and the Dental Education Committee and to the consideration of penal cases.

IMPERIAL CANCER RESEARCH FUND.

THE annual report of this Fund was adopted at a meeting of the General Committee held at 8, Queen-square on Nov. 19th, the Duke of Bedford presiding. In introducing the report, Sir Humphry Rolleston, Chairman of the Executive Committee, summarised the account given by the Director, Dr. J. A. Murray, F.R.S., of the work published from the laboratory during the period under review; this extends to 16 months since it has been decided in future to hold the annual meeting in November rather than in July. Among the 11 papers communicated to general and special journals attention was drawn to one by Dr. W. Cramer on the influence of innervation on the experimental production of skin cancer by tar,[1] and one by Dr. G. M. Findlay on the production of cancer by a single application of tar.[2] Dr. Cramer deprived a skin area in a number of mice of the nerve-supply and then painted it twice weekly until cancer supervened. This only occurred after a longer course of tarring than was necessary in normal animals, and, therefore, absence of nerve-supply certainly does not predispose to the genesis of cancer as has been suggested. The nerves grow again into the denervated area, so that the experiment does not give an absolute answer to the question, whether, if renewal of the nerve-supply could be prevented, cancer would not be produced at all.

Dr. Findlay's experiments were devised to determine if it is possible to reproduce in animals the remarkable sequence reported in the human subject from time to time, in which an accidental tar burn has been followed after a short interval by the appearance of typical progressive carcinoma at the point of injury. For this purpose a large number of mice received a single application of hot tar on a small area of the back. A slight swelling and reddening of the skin followed but soon subsided. It was not till the lapse of a year that any further change was observed, and then three mice showed typical cancer of the skin in the site of the application. This experimental result is important in that it shows that general intoxication with tar, which has been invoked by many workers as an important factor in the causation of tar cancer is, to say the least, not essential. Dr. Findlay is also continuing his research into the action of manganese salts, especially as regards the more delayed effects, but has not published any further report in the year under review.

The work under the Atholstan Grant for research is being carried on with great diligence by Dr. A. M. Begg. His investigations on the Rous fowl sarcoma and the infective lymphosarcoma of the dog have inevitably taken on a new orientation since the publication of the work of Dr. W. E. Gye, of the Medical Research Council. Dr. B. R. G. Russell took a keen interest in this work, and since his lamented death Dr. Begg has had the advantage of close association with Dr. Gye. This informal collaboration has been a source of great satisfaction to the Executive Committee. Dr. Begg's investigations are progressing satisfactorily and it is hoped will soon be ready for publication. The important work of Dr. Gye and Mr. Barnard, in addition to the many new lines of inquiry it opens up, calls for the most careful repetition with as many different kinds of tumours as possible. This is now occupying much of the time and energy of the scientific staff.

The Duke of Bedford made sympathetic reference to the loss entailed by the deaths of Dr. Sidney Martin, F.R.S., and of Dr. B. R. G. Russell, for 17 years a member of the scientific staff. As to the report of the hon. treasurer, Sir George Makins, he pointed out that the expenditure had exceeded the fixed income of the Fund—that is, the income derived from investments—by £1765. Subscriptions and legacies had made good that adverse balance, but to be compelled to rely on subscriptions and legacies for carrying on the work of the Fund was always unsatisfactory. He called attention to the list in the Director's report of workers in different parts of the world to whom material has been supplied from the laboratories of the Fund. The ability of the Fund to assist in the investigation of cancer in other laboratories, and the willingness of the staff to do so seemed a most practical way of making collaboration in research really effective, especially as it did not encroach in any way on the freedom of the workers. But this service was often a very laborious one, took up a great deal of the time of the workers, and consequently entailed a considerable addition in working expenses. But it was an increase in expenditure which was a legitimate source of satisfaction inasmuch as it means furthering research throughout the Empire. It was satisfactory to learn that the Stroud Laboratory (at Mill Hill) had been completed, that full opportunity could now be given to carrying out research under Lord Atholstan's gift, and that papers relating to the subject of this research might shortly be expected.

Sir Thomas Barlow, Bart., was nominated for re-election by the Royal Colleges of Physicians and Surgeons as a member of the Executive Committee, and Prof. William Bulloch, F.R.S., and Prof. A. E. Boycott, F.R.S., were re-elected members of the same Committee.

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[1] Brit. Jour. Exp. Path., 1925, vi., 71.

[2] THE LANCET, 1925, i., 714.

THE GENEVA OPIUM CONFERENCES AND THE HAGUE CONVENTION.

AN epitome of the work accomplished at the two prolonged Opium Conferences at Geneva has already appeared in THE LANCET,[1] and full official records [2] of the proceedings and a special Foreign Office report [3] have now been issued. It will be remembered that the first of the two conferences purported to deal only with the suppression of opium-smoking (Chapter II. of The Hague Convention), while the second conference was concerned with the abuse of morphia, cocaine, and other drugs of addiction (Chapter III. of The Hague Convention). Again and again in the course of the debates it was manifest that this artificial dissection of The Hague Convention and the reference of its chapters to two different conferences had no logical justification, and indeed caused considerable confusion leading to the regrettable withdrawal of the United States delegation, followed by that of China. This unfortunate dichotomy occasioned lengthy and somewhat pedantic discussions as to the competence of one conference to encroach on the reference to the other, and to the unpleasant suggestion that the first conference (which included only representatives of countries concerned with "prepared" or smoking opium) was in fact "a prepared opium bloc" whose members were seeking to release themselves from their obligation under The Hague Convention (Article 6) to bring about the effective suppression of "prepared opium." The American delegation contended for the limitation of the production of opium so as to preclude the use of it or its products for other than medical and scientific purposes. This general principle had been endorsed by the Advisory Committee of the League of Nations on the traffic in opium as being the basis of The Hague Convention of 1912, and the Fourth Assembly of the League had requested the Council of the League to give effect to this principle and to summon a conference for that purpose. It is true that the delegate for India made reservation as to opium-eating as practised in that Dependency not being regarded as illegitimate, and this reservation occasioned considerable difficulty in relation not only to production of opium in India but also to the invasion of sovereign rights by international engagements.

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[1] THE LANCET, 1925, i., 878.

[2] League of Nations. Records of the Second Opium Conference (Geneva), Vol. I. and II. (C.760, M.260, 1924, xi.). London: Constable and Co., Ltd. Vol. I., 14*s.* 6*d.*; Vol. II., 9*s.*

[3] H.M. Stationery Office. Cmd. 2461.

The attempt to discriminate between opium-eating as harmless or even beneficent, opium-smoking as a "social vice," and addiction to morphia or its derivatives, has not received scientific or pharmacological justification; while the finding of the Joint Health and Opium Subcommittee of the League of Nations, "that the medical use should be considered the only legitimate use," probably represents the best and informed opinion. When Lord Cecil appeared on the scene as first British delegate on Jan. 19th, 1925, he used all his forensic efforts to separate the work of the two conferences, urging that "opium-smoking had nothing whatever to do with the question of drug addiction." Yet he admitted that "unless growth and production are controlled it will be very difficult to control the use of drugs," and again he said, "it is quite true that a good deal of Indian opium is exported for the purpose of smoking." Much of this Indian-grown opium goes to Crown colonies for smoking purposes, and Sir Malcolm Delevingne in his report to the Foreign Office, says:—

> "The fact that a very considerable proportion of the revenues of certain of the Crown colonies is drawn from the traffic in opium-smoking, which is a criminal offence in the self-governing parts of the British Empire and which His Majesty's Government is internationally bound to suppress, lends colour to this allegation. . . . It is doubtful whether, even among the neutral delegations who were not prepared to support the United States proposal, that feeling has been dissipated. It is certain that the United States held it strongly. It is a point of which more will undoubtedly be heard."

At times the fate of the two Geneva conferences was pronounced to be "critical." An attempt to remove the "deadlock" by reference to a joint delegation or commission of the two bodies led to an inconclusive result, and Lord Cecil was constrained to admit that it would very likely have been better not to have had two conferences but one. The final protocols and convention elaborated by the two conferences have already been published and criticised. The suppression of opium-smoking, envisaged by Chapter II. of The Hague Convention, is to take place within 15 years from a date, to be determined by a League of Nations' Commission, when smuggling of opium from producing countries shall have ceased to be a serious obstacle to the enforcement of restrictive measures. A group of opium-producing countries, of which China was not one, agreed to take such measures within five years. A new convention made some additions to The Hague Convention, e.g., the inclusion of coca leaves and Indian hemp, empowered the exclusion of certain preparations, and established a Permanent Central Board to receive information, to compile statistics, to watch international trade, to ask for explanations to publish reports thereon, and communicate them to the Council. All these provisions are dependent on the ratification of the convention (the period for signature closed on Sept. 30th) by ten Powers, including seven who are accorded representation on the Central Board, of which two must be members of the Council of the League.

Some who have reviewed the work of the Geneva conferences find consolation in thinking that an advance has been made even though, as Mr. Zahle, the able President of the second conference, admitted, the attempt to limit production to medical purposes was not successful, and on the definite suppression of opium-smoking no agreement was reached. Mr. J. P. Gavit, who attended every session of the conferences, concludes [4] that "the agreement of the first conference represents no progress worth discussing, and the new drug convention adopted by the second is a thing of printed paper with the odds heavily against its ever being anything else." Prof. W. W. Willoughby, who acted as technical expert to the Chinese delegation, considers [5] that "the initial mistake" was providing for two conferences instead of one, and he holds that "little substantial result is to be expected" from the protocols arrived at. Other writers, including Sir William Collins,[6] and Prof. Perrot,[7] from the French point of view, have also commented on the results. In a pamphlet entitled "Public Health Aspects of the Narcotic Problem," which has reached us from China, Dr. Wu Lien Teh, who speaks with first-hand knowledge of the Far East and was one of the delegates of China to the first Hague Conference, laments the conclusion of the Geneva Conference which made suppression of opium-smoking contingent upon the success of efforts against smuggling. He disputes the alleged virtue of opium against plague, malaria, and tuberculosis, or the necessity of opium-smoking for the Chinese or opium-eating for the natives of India. He alleges that morphia has been and is smuggled into China by the ton, much of which is derived from European countries. It is to be regretted that the legislative results of The Hague Convention in Great Britain in the shape of the Dangerous Drugs Acts, and in the United States in the shape of similar statutes, cannot be given wider and international application, for no one disputes that the production of opium, morphia, cocaine, and other "habit-forming" drugs is grotesquely in excess of any conceivable medical or scientific requirement, and that the surplus output is prostituted to purposes of vice and crime, and to the degradation and demoralisation of the pliant victims of addiction to these dangerous drugs.

IRELAND.

(FROM OUR OWN CORRESPONDENT.)

Sanitary Condition of School Buildings in the Irish Free State.

Mr. T. Johnson, leader of the Labour Party in the Dail, recently asked the Minister of Local Government to give some definite statement of his intention with regard to putting the school buildings into habitable condition. The Minister, in reply, said that the management of the school was responsible for upkeep; the schools were not State schools, but State-aided schools. It was evidently not possible, without changing that system, to impose by the authority of the State a system of local maintenance, whatever might be done to encourage it.

The Minister's answer shows for the first time in history any official appreciation of the responsibility of the State for the sanitary condition of the schools. It has long been recognised that many of the school buildings in all parts of Ireland were unsuitable and insanitary and likely to cause disease among the children crowded into them. The fact that the local manager was legally responsible for the condition of the school premises rendered the central education authority slow to interfere. Indeed, a former chief official of primary education in Ireland, when a demand was made on him by a committee of persons interested in the public health that his department should exercise some control over the sanitary condition of the schools, ridiculed the suggestion, and declared that he and his department were concerned only with the minds of the children and not at all with their bodies.

Enforcement of Vaccination.

For some months past the Department of Local Government and Public Health of the Irish Free State has been endeavouring by means of persuasion to induce the Health Board of Co. Wexford to enforce the laws concerning vaccination. These exertions seem to have been useless, and the Department has at length been compelled to adopt stronger measures. The Health Board was notified last week that the Minister had issued instructions to the Chief State Solicitor to take proceedings by way of mandamus to compel the Board to carry out its legal obligations. The Minister adds that the names of the members who had voted against the enforcing of the law had been furnished to the State Solicitor in order that they might be named as special defendants and that costs might be recovered from them personally. The letter of the Department was marked "Read." The question of compulsory vaccination was also raised in the Dail last week, when, in reply to a question, the Minister said that he did not intend to introduce legislation to abolish compulsory vaccination, but that he proposed to enforce the existing law.

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[4] Opium. By John Palmer Gavit. Messrs. Routledge.

[5] Opium as an International Problem. Prof. W. W. Willoughly. The Johns Hopkins Press.

[6] Contemporary Review, August, 1925.

[7] Revue Scientifique, July, 1925.

False Economy.

The authorities of two asylums in the Free State propose to save money by measures which are likely to interfere seriously with efficiency. At the Grangegorman Mental Hospital proposals of economy put forward by a subcommittee were adopted. Among these proposals were a 10 per cent. reduction of the salaries of all employees, and reductions in the yearly increments and long service pay. It seems that a proposal was also made to lengthen the hours of duty of attendants and nurses, but the subcommittee did not accept this. The present working week consists of 56 hours. It is, of course, doubtful how far the Committee of Management has power to alter existing rates of pay, which must, in some cases at least, be matters of contract. The mere proposal, however, is bound to give rise to discontent. In Mullingar Mental Hospital an even more dangerous experiment is to be tried whereby not only the salaries of employees but the dietary of the patients would be curtailed. It is to be hoped that the Department of Local Government will refuse to sanction a dietary strongly condemned by the medical officer, who is primarily responsible for the health of the patients.

PARIS.

(FROM OUR OWN CORRESPONDENT.)

Foreign Patients in the Hospitals.

THE chiefs of the Paris hospitals have been struck by the increasing number of aliens whom they attend as patients in the wards. In this connexion Dr. P. E. Weil quotes statistics from the Hôpital Tenon to show that in a period of six months (the last quarter of 1924 and the first quarter of 1925) there received treatment, in medical and surgical wards together, 8321 French people, as compared with 537 aliens, respectively 93·6 and 6·4 per cent. The points of inquiry were the length of time these foreign patients had been in France, their state of health previous to their arrival in the country, the work they had done since their arrival, whether they were suffering from temporary or chronic illnesses, their family responsibilities, and finally their social status. 33 per cent. suffered from curable complaints, 66 per cent. were affected with conditions which more or less seriously diminished their earning powers, and many became a charge on the Assistance Publique. Almost all the foreign patients had been in France for several months, some for several years. There were many cases of old-standing tuberculosis, and many patients had been infected long before their arrival in France. Tuberculosis and chronic bronchitis are of frequent occurrence among natives of Tunis and Morocco, who do not readily become acclimatised in France. In three cases syphilis was found to be of very old standing, but its visceral manifestations were so extensive as to render the patients useless for work. Of the total of foreigners, two-thirds were single, but one-third were married with families. Thus the number of aliens under treatment in the Paris hospitals is considerable, and as many have chronic diseases which render them non-productive to the State they become a burden on the community. Further, a certain proportion of these patients are carriers of infection, particularly of pulmonary tuberculosis. There is, therefore, some need of measures to control immigration and ensure the possession of a certain "fund of health" by those who enter France. To this end the Academy of Medicine has nominated a commission which will give full consideration to the question and outline suitable measures for reform.

Serum Therapy for Poisoning by Mushrooms.

Dr. Dujarric de la Rivière has been for several years conducting researches on animals experimentally poisoned with non-edible mushrooms of the genus Amanita (*A. phalloides, verna, virosa, citrina*) to test the efficacy of the serum of horses immunised by progressively increased doses of the extracts of such fungi. This serum, which he has named "sérum antiphallinique," and which has given encouraging results on the experimental animals, has recently been tried out in man. The effects of the serum were sufficiently satisfactory to justify further trials being made, first because at present there is no adequate therapeusis of fungal poisoning, and secondly because it appears that the use of the serum is not attended with any risk. Treatment should be begun as early as possible after ingestion of the poisonous mushroom and should be administered by the intramuscular route. The exhibition of the "serum antiphallinique" does not interfere in any way with the employment of the usual therapeutic measures, such as cardiac tonics. It would be of advantage if this serum was available at all treatment centres and particularly in the hospitals to enable further tests to be made, where doctors might obtain it when necessary.

Tuberculosis in France.

In France tuberculosis was a grave menace before the war, and the war only increased the dangers of its spread through female labour, insufficient feeding, increased exposure, and abnormal expenditure of bodily energy. The intensive campaign against this disease, initiated by the Rockefeller Foundation, has been continued with excellent results, according to the report of the National Committee against Tuberculosis. In 72 of the French Départements 530 dispensaries are now in active operation. Since the campaign was opened consultations have numbered about 495,000 per annum, the sputum examinations 81,000, and the number of patients placed in conditions favouring good treatment 28,000. The mortality from tuberculosis, which was rising in 1916 and 1917, declined from 1918 to 1920, falling from 278 to 185 per 100,000. Since 1920 no State money has been available for maintaining the statistical records of tuberculosis in France. The *Matin* assigns this unfortunate condition of things chiefly to rivalry between Government bureaus. It appears that the task of keeping the tuberculosis records was transferred from the general statistical bureau to the Ministry of Hygiene, which failed to receive a corresponding budgetary increase.

MEDICINE AND THE LAW.

Workmen's Compensation: Epithelioma of the Scrotum in a Cotton-Spinner.

MEDICINE and the law are probably in agreement over a decision of the county court judge at Oldham in respect of a spinner who had suffered from epithelioma of the scrotum, an occupational disease on which interesting observations have been recorded by Dr. Alexander Scott and Dr. E. L. Kennaway amongst others.[1] From the account published in the *Oldham Evening Chronicle* it appears that the employers did not dispute that the workman acquired the disease through the nature of his work as a cotton mule spinner. He had undergone an operation which the employers contended had been entirely successful. The point at issue between the parties was whether he could be expected to go back to his former employment or not. If not, then he would sink from the wage-level of a skilled workman to that of an unskilled workman and compensation would have to be assessed on the basis of the consequent difference in his earnings. Medical evidence for the applicant expressed the opinion that the fact of his having had the disease indicated that he was predisposed to the action of the mineral oils in that particular kind of employment and that therefore it could not safely be said that cancer would not return. This view was ultimately admitted by the medical witnesses called on behalf of the other side. As soon as this point was conceded, there was an end of the case. For the employers it was stated that other men with a similar history had returned to their old work without recurrence of the disease. A doctor testified that the applicant had been certified last April to have sufficiently recovered to be fit for work, and that on recent re-examination he was found to be a sound and healthy man so far as the operation was concerned. The learned judge pressed this witness to know if any medical expert would stake his professional reputation on the non-recurrence of the disease. Naturally no one was prepared to go so far. The judicial attitude is worth noting as a guide for future cases of this kind.

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[1] THE LANCET, 1925, i., 932–3.

His Honour: Do you think he is a person predisposed to this disease?

Dr. Carr (called by the respondents): I don't think I quite agree with those words.

His Honour: Then how is it that of all these people who work on these mules he should get it? Why should he be singled out? By providence or what?

Dr. Carr (after consideration): I think you must say he is predisposed to it.

His Honour: Knowing a man is predisposed to a disease, would you recommend him to go back to the place and occupation where he got the disease?

Dr. Carr: No.

This was a fair and candid answer, and it meant that the employers could carry their case no further. The learned judge, who, it must be remembered, does not sit regularly in a town like Oldham without acquiring considerable experience in cases of industrial and occupational disease, assessed the applicant's present earning capacity at 38*s.* per week and awarded 6*s.* 11*d.* per week compensation. The principle of the decision seems to be well established, and it is difficult to see how it could be reviewed upon appeal.

The Services.

ROYAL ARMY MEDICAL CORPS.

Maj. E. M. Pennefather to be Lt.-Col., Capt. W. P. Croker to be Maj. to complete estabt.

Capt. G. O. F. Alley is granted the temp. rank of Maj. whilst empld. as a Dep. Asst. Dir. of Hygiene and Pathology.

SUPPLEMENTARY RESERVE OF OFFICERS.

Maj. H. B. Walker, late temp. Maj., R.A.M.C., to be Capt.

TERRITORIAL ARMY.

Capt. G. W. B. Shaw, R.A.M.C., to be Divl. Adjt., 44th (Home Counties) Divn. T. A., vice Capt. S. D. Reid, R.A.M.C., who vacates the appt.

Capt. H. A. Sandiford, R.A.M.C., to be Divl. Adjt., 49th (West Riding) Divn., T.A., vice Capt. C. Popham, R.A.M.C., who vacates the appt.

General List: Lt. Horace Smith Ward (late M.G. Corps) to be Lt.

Sanitary Companies: Lt. G. W. Wright to be Capt.

TERRITORIAL ARMY RESERVE OF OFFICERS.

Capt. J. C. Robb (supernumerary for serv. with the Belfast University Contgt., O.T.C.) from the Active List, to be Capt.

ROYAL AIR FORCE.

The undermentioned are granted short service commissions as Flying Officers, for three years on the active list: G. M. Anderson, B. L. Edwards, and W. D. McKeown.

Flying Officer R. W. White is promoted to the rank of Flight Lt.

INDIA AND THE INDIAN MEDICAL SERVICES.

Lt. C. Hudson to be Col.

Des Raj Nayar to be temp. Lt.

The King has approved the grant of a temporary commission to Harbans Singh.

His Majesty has also approved the relinquishment of their temporary commissions by Capt. Priya Nath Lahiri, who is permitted to retain the rank of Capt.; Capt. Ramesh Chandra Basu, who is permitted to retain the rank of Capt.; Lt. Mir Abdul Basir, who is permitted to retain the rank of Lt.; and Lieut. Fakhar-ud-Din.

Capt. M. Moosa Khan has been appointed Superintendent of the Central Jail, Cannanore, vice Maj. J. C. Bharucha, who reverts to the Madras Civil Medical Department; Lt.-Col. A. W. Overbeck-Wright, on return from leave, has been reposted as Superintendent of the Mental Hospital, Agra. On return from leave, Capt. J. H. Smith has been reposted to charge of the Mandalay Central Jail in relief of Maj. J. Findlay, who has been appointed Superintendent, Insein Central Jail at Mandalay; Capt. A. J. De Souza will act as Civil Surgeon, Cochin.

Revised Rates of Furlough Pay in India for Regular Executive Officers of the Indian Medical Service in Military Employ.

The furlough pay in India of regular executive officers of the I.M.S., while on leave in India, other than privilege leave, will be at the monthly rates given below, to which full overseas pay will be added, when admissible.

Lieutenants	Rs. 375
Captains—	
During first three years' service as captain ..	500
With more than three years' service as captain	600
With more than six years' service as captain	700
Majors—	
During first three years' service as Major. ..	750
With more than three years' service as major ..	900
With more than six years' service as major ..	1050
Lieut.-Colonels—	
Until completion of 23 years' total service ..	1200
During twenty-fourth and twenty-fifth years of service	1300
After completion of 25 years' service	1400
When selected for increased pay..	1550

These revised rates of pay will have effect from Jan. 1st, 1926.

WEST AFRICAN MEDICAL STAFF.

The following appointments are announced: Dr. M. W. Fraser, medical officer, Gold Coast, to be a Senior Medical Officer in Nigeria in succession to the late Dr. J. A. Beamish; Dr. S. Goodbrand, medical officer, Gold Coast, to be a Senior Medical Officer in Nigeria to fill the vacancy caused by promotion of Dr. J. M. Pollard, to be an Assistant Director of the Medical Service in that Colony; and Dr. J. E. Moffatt, medical officer, Gold Coast, to be a Senior Medical Officer in that Colony in succession to Dr. R. O. White who has retired.

Surg. Comdr. H. E. Yeo White, M.V.O., R.N., has been appointed, on the occasion of the visit of H.R.H. the Prince of Wales to Africa and South America, an officer of the Civil Division of the Most Excellent Order of the British Empire.

DEATHS IN THE SERVICES.

Colonel John Lloyd Thomas Jones, I.M.S., retd., brother of Sir Robert Armstrong-Jones, died at his residence in London on Nov. 12th, aged 62. The fourth son of the late Rev. Thomas Jones, of Eisteddfa, Criccieth, he was a student at St. Bartholomew's Hospital and graduated in medicine at the University of Durham in 1885, in which year he also obtained the M.R.C.S. Eng. Two years later he entered the I.M.S., became Captain in 1888, Major in 1899, and Lieut.-Colonel in 1907. In India he first acted in medical charge of the 3rd Beloochistan Regiment at Mhow, later performed similar duties with the 23rd Bombay Light Infantry, and afterwards with the 16th Bombay Infantry; respectively at Karachi, Malegaon, Seetabuldee, and Kamptee. For some time he was in civil charge at Ratragiri and Karwar, when he was again transferred to military duties, serving with the 7th Bombay Lancers in Quetta, and with the 14th Bombay Infantry at Cutch-Bhuj. He afterwards acted as civil surgeon at Kaira, Broach, and Aden. In 1897 he was appointed on famine duty, serving as deputy sanitary commissioner and special plague officer at Poona. By his tact and special knowledge he overcame the native prejudices against segregation, and for these services received the special thanks of the Government of India. In 1899, after leave in England, his services were transferred to the Finance Department of the Government of India and he was appointed Deputy Assay Master to H.M.'s mint in Calcutta, and in 1908 he was transferred to the mint at Bombay as Assay Master. He served at Calcutta and Bombay until his retirement in 1918, when his continuous and devoted services to the British and native officers were recognised by a presentation of gold and silver plate. Colonel Lloyd Jones was a Fellow of the Geological Society, of the Institute of Chemistry, and of the Chemical Society of London, and a member of the Institution of Mining and Metallurgy. He was a member of the Order of St. John of Jerusalem, and during his residence in Bombay served as one of the justices of the peace in that city. A keen horseman and a good judge of horses, he excelled in polo and was well known in Bombay.

Public Health Services.

SCHOOL MEDICAL SERVICE.

THE following are figures for 1924 :—

Name of district.	No. on roll.	Average attendance.	Routine inspections.	No. examined in "code" groups.	Special and re-inspections.	Percentage found on routine examination to require treatment.
Liverpool.	Not stated.	Not stated.	39,098	—	78,986	19·7
Carlisle ..	8,024	7,129	—	2,544	1,516	33·3
Hastings .	6,751*	6,142*	2,163†	—	8,024	18·4
Tunbridge Wells ..	Not stated.	Not stated.	208	701	1,475	20·5

* These are the figures for last quarter.
† In addition 60 other reinspections.

Liverpool.

In his introduction Dr. A. A. Mussen, medical officer of health and school medical officer, mentions four directions in which he looks for further progress —namely : (1) The provision of more open-air education for delicate children, of whom there are a large number in Liverpool. (2) The extension of the scheme for dental treatment, as out of 89 public elementary schools in the city placed on the list for treatment it was only possible to deal with 62. The number of children examined showed, however, considerable increase, being nearly twice as many as in 1921, and the number of parents accepting treatment showed a marked increase. (3) Increased facilities for dealing with the question of uncleanliness. On this subject Dr. Mussen points out that infestation with vermin is in the majority of cases a family condition, and he shows that a satisfactory scheme for dealing with the problem on a large scale involved : improvement in the housing and domestic facilities ; the enlightenment of the public and the setting of a higher standard ; increased public facilities for cleansing—e.g., the use of large spray baths. (4) His fourth desideratum is the reopening of a class for stammering children which was discontinued during the war. In general, the organisation for inspections and treatment seems quite satisfactory ; for example, we note there are six special schools for mentally defective and physically defective children, and there are two classes for children of defective vision. There is an interesting note on 57 children suffering from the after-effects of encephalitis lethargica, and Dr. Mussen shows how these may take the form of paralysis of Parkinsonian type in a few, of mental defect in a few others, but that in others (the great majority) the essential feature is character change. We agree with Dr. Mussen that it would be inadvisable to certify these children either as mentally defective or as lunatics, and that the right method is to certify them as physically defective, but to deal with them apart from the ordinary physically defective child.

Carlisle.

The report of Dr. Joseph Beard is short but full of statistical tables. It may be doubted whether sufficient attention is attracted by these tables ; short comments might make them more interesting to both lay and medical minds. There is a noticeable decrease in the figures for defective vision, and Dr. Beard suggests that this may be a result of changes in the curriculum. There are no schools for the physically or the mentally defective. The report deals with open-air education at some length and is very instructive. The "Newtown delicate class" presents some interesting features. There is a fair sprinkling of tuberculous cases in the class, and 15 children received injections of tuberculin B.E. out of 83 children dealt with in the class. The items o cost for this class are illuminating, the average total per child being only 8*d.* per day.

Hastings.

Dr. G. R. Bruce, medical officer of health and school medical officer, publishes his school and general public health reports together, and it is evident that the coördination now in force is very complete. For example, the borough is divided into four districts, each with a health visitor, the scope of whose activities is very large and who also does the school work, so that, as Dr. Bruce says, "the nurse with continuity of office may follow the children from birth to the end of their school days, while the long-suffering mother has one visitor the less." Each nurse has also an infant welfare centre in her district, while each half of the town is served by an antenatal centre. There is cordial cöoperation with the many activities of the voluntary associations which Hastings is fortunate in possessing. Dr. Bruce is responsible not only to the Education Committee for the mentally defective school-children, but also to the Mental Deficiency Act Committee for other persons. There is a special school for mentally defective children at Hollington doing good work ; it is benefited by the recent establishment of an occupation centre for lower grades. There is at present no school for the physically defective. Crippling of severe degree is uncommon in Hastings, thanks to the comparative absence of acute poliomyelitis, rickets, and surgical tuberculosis. There are, however, several mild cases, and the solution is an orthopædic scheme together with the open-air school, which is now being considered by the Education Committee and should soon materialise.

Tunbridge Wells.

Dr. F. C. Linton, medical officer of health and school medical officer, includes school work in his public health report, and deals with it briefly. Coördination is, he states, complete, since he is responsible for child welfare and the care of debilitated children under school age as well as for school-children. He considers that the increased treatment of tonsils and adenoids may be a factor in the reduction of the incidence of infectious disease ; a similar opinion has been expressed in other areas. We are sorry to see there are no special schools in the area, though Dr. Linton states that, using the term in a very broad sense, there are 113 physically defective children. Sixteen of these are, however, attending a private and voluntary open-air school provided by the kindness of a lady resident.

TUBERCULOSIS SERVICE.

YEAR by year the county councils and the county boroughs find themselves bearing a larger and larger share of the tuberculosis work of the country, and we note the welcome tendency for reports of tuberculosis officers to become more informing and valuable.

The report of the central tuberculosis officer of the *Lancashire County Council* for the year 1924 gives an extensive survey of the conditions of tuberculosis in the county. Details of death-rates, notifications, radiological investigation, research work, propaganda and education of the public, housing conditions, after-care, new hospitals and dispensaries, are all dealt with at considerable length. One of the most interesting sections of the report is devoted to radiological work in which the value of X ray examination in diagnosis and treatment of tuberculosis is emphasised. X ray installations have now been increased so that there is one dispensary in each area equipped for this purpose, and over 4000 radiological examinations have been made during 1924, in comparison with less than 200 in 1920 when the first installation was made. The radiograms given in the report show that the tuberculosis officers of Lancashire possess a wealth of clinical material of which they make good use. A considerable amount of research work is being done and no less than nine special methods of treatment have been investigated. As the central tuberculosis officer points out, the results of these investigations do not show that any drug or preparation can be regarded as definitely beneficial in the treatment of tuberculosis, yet the time spent by the staff has been by no means wasted but rather valuable experience has been gained. The report shows that a further decline in deaths from tuberculosis and new cases notified occurred during the year 1924, the death-rate being the lowest so far recorded.

The report for the *City and County of Newcastle-upon-Tyne* shows a definite decrease of the notifications for the year for the first time since the introduction of compulsory notification. The figure for pulmonary tuberculosis in adult females exceeded that for adult males, and is the highest recorded since 1912. The tuberculosis medical officer considers that the adverse economic condition of recent years has been a contributory factor in this result, but suggests that there may be other explanations still to be found. The report also contains a record of institutional treatment at Barrasford sanatorium, where early or moderately advanced cases of pulmonary tuberculosis are treated; at the sanatorium pavilions of the City Hospital, where more advanced and emergency cases are dealt with; and at Stannington sanatorium, where tuberculous children are cared for. Statistical tables are given showing the previous occupation of patients, the average number of beds occupied, and the number of patient days, results of treatment, and other important details.

In the report on tuberculosis for 1924 from the *Public Health and Housing Department for Birmingham* figures are given showing the mortality from tuberculosis in 1923 of eight other large towns in Great Britain with which to compare the Birmingham figures. The mortality-rate per 1000 of all forms of tuberculosis in these towns shows that Birmingham occupies a very favourable position. The report emphasises the advantage which Birmingham possesses in having sufficient beds for the work. Interesting statistics are given showing the working capacity of patients when first examined, newly notified cases, old cases, "suspects" and "contacts," and a section showing results of dental treatment. The services of a part-time dental surgeon are utilised and the treatment consists mainly of extractions, fillings, and scalings. It is very encouraging to find this important aspect of the tuberculosis problem so carefully dealt with. The report also devotes a section to the new light treatment department which has been installed.

INFECTIOUS DISEASE IN ENGLAND AND WALES DURING THE WEEK ENDED NOV. 14TH, 1925.

Notifications.—The following cases of infectious disease were notified during the week:—Small-pox, 73; scarlet fever, 2262; diphtheria, 1052; enteric fever, 67; pneumonia, 889; puerperal fever, 37; cerebro-spinal fever, 4; acute poliomyelitis, 6; acute polio-encephalitis, 1; encephalitis lethargica, 43; continued fever, 1; dysentery, 2; ophthalmia neonatorum, 93. There were no cases of cholera, plague, or typhus notified during the week.

Deaths.—In the aggregate of great towns, including London, there were 6 deaths from enteric fever (none in London), 34 from measles, 5 from scarlet fever, 29 from whooping-cough, 28 from diphtheria, and 44 from influenza. In London itself there were 8 deaths from diphtheria and 17 deaths of infants under 2 years of age from diarrhœa and enteritis (a substantial fall from previous weeks).

LACK OF SMALL WARDS.—The Minister of Health has drawn the attention of the guardians to the lack of small wards in Lambeth Poor-law Infirmary and to the consequent difficulties of administration. Stress is laid on the value, for instance, of small wards in the treatment of puerperal fever. At Lambeth such cases have to be treated in large wards, and the Minister points out that the advantages of treatment in small ones apply to other diseases besides that mentioned, and suggests that the guardians should consider the adaptation of an existing block at the institution for such purposes.

Correspondence.

"Audi alteram partem."

INOCULATION AGAINST THE COMMON COLD.

To the Editor of THE LANCET.

SIR,—Dr. A. I. Simey's address on the prophylaxis of the common cold and febrile catarrhs in your last issue will be of great interest to all who are responsible for the care of children at boarding schools. Dr. Simey understates rather than overstates the importance of this matter as, in addition to all those who come under the care of the school medical officer for catarrhal infections, there are always a considerable number who suffer from colds without pyrexia, and who fail to report to the house matron or medical officer lest they be put off games. These minor cases, although less serious to themselves, are fruitful sources for spreading the infection.

Dr. Simey's bold suggestion concerning prophylactic inoculation in boarding schools deserves the consideration and support of school medical officers. The fact that inoculation with certain specific bacteria is advocated does not mean that these bacteria must be accepted as the primary cause of the disease. It is conceivable, and perhaps even probable, that the primary cause, if unattended by secondary infections, would be negligible. With regard to the details of his suggested experiment, I think that it is important that vaccines should be made from recently isolated cultures from acute infections, and that the vaccines should be of recent date—say not more than four months old.

With regard to the organisms which should be included in the vaccine, there will be some difference of opinion, but if several large schools are carrying out such an experiment in conjunction with different laboratories, valuable statistical evidence may be obtained on this point. Dr. Simey's suggestion of inoculating during the summer and Christmas holidays would, I think, be unsatisfactory. In the summer holidays no large numbers of recent cultures would be available, and few parents would be inclined to go to the necessary trouble during the summer months when they and their family are probably away from home and out of reach of any doctor they know. Similarly, it would not be popular to disturb the round of Christmas-time festivities. The whole matter would more simply and efficiently be carried out by the school medical officer.

I would suggest, therefore, that two inoculations should be given during the first half of October, and again two in the second half of January. This would enable the vaccine to be made up from the first batch of catarrhal infections which usually occur towards the end of September, and also allows for the probability that artificial immunity to the bacteria in question is in many cases of comparatively short duration.

I am, Sir, yours faithfully,

London Hospital, E., Nov. 23rd. G. T. WESTERN.

NASAL LAVAGE AND ACUTE MIDDLE-EAR INFLAMMATION.

To the Editor of THE LANCET.

SIR,—Acute middle-ear inflammation and its complications, due to nasal lavage in some form or another in healthy and unhealthy noses, has become so frequent that the subject requires thorough examination and ventilation. The usual reasons given for nasal lavage when there is nothing whatever the matter are that it keeps the nose clean and clear, and prevents infection. The Ministry of Health must accept part of the responsibility, for, in one of the recent influenza epidemics, they advised it as a preventive measure. It does not seem to be realised that the lining membrane of the nose is a very delicate thing and possesses the functions of warming, moistening, and purifying the air passing over it; in these functions the ciliæ, mucous glands, and blood-supply play a large part and the application of any unnatural material must hinder them in their work—at first overstimulating and then temporarily paralysing them. Patients often say, "But you should see what a large amount of stuff comes away after doing it," thinking they are getting rid of a collected nasty discharge, and not realising that the nasal mucous membrane, by pouring out the extra normal mucus, is protesting as vigorously as it can against the outrage inflicted upon it. It is quite common for repeated attacks of acute middle-ear inflammation to result from some of the injected solution passing up the Eustachian tube. It should be generally known that the healthy nose is hindered in its work by the application of anything unnatural and the danger to hearing and life is a very real one.

Nasal lavage is used in unhealthy noses whatever is the matter when, in the majority of cases, surgical interference is the proper treatment. A placebo is sometimes a useful thing, but nasal lavage is a dangerous one. It is common to treat an ordinary cold by irrigation, usually with salt and water, and it is then especially likely to cause middle-ear inflammation. I have lately had three such cases in private practice in 48 hours, one of which just escaped with life after an extensive mastoid operation. In each one the solution was felt to enter the ear immediately before the onset of pain. A cold is an infective inflammation of the nasal lining membrane and such treatment is not only a danger to the ears, but violates the fundamental rules for the treatment of inflammation—namely, rest and heat. I am constantly hearing of this method of treatment for colds by the matrons in our schools. I wish to protest most strongly against it, but am afraid that nothing will stop it unless parents order that nasal lavage in any form should never be used by their children before they enter a school and if, in spite of this, it is done and evil results, an action for damages is brought against those responsible.

I am, Sir, yours faithfully,
Arthur H. Cheatle.

Harley-street, W., Nov. 23rd, 1925.

POST-GRADUATE EDUCATION.

To the Editor of The Lancet.

Sir,—At the dinner of the Royal Society of Medicine on Thursday last the Minister of Health referred to the establishment of a post-graduate school in London which would attract general practitioners from the country and towns to learn from the leaders of the medical profession. I am in agreement as to the advantage such a school would possess for those fortunate enough to attend it. I cannot help feeling, however, what an advantage it would be if the leaders of the profession who have spent so much time dealing with the end-results of disease in our hospitals could in their turn go to the country practitioner and to the welfare medical officers of our big factories for a time and study the very first symptoms of diseases which, if unchecked, will ultimately bring their victims into the out-patient department, and finally into the in-patient department of the great hospitals. The worker suffers from these early symptoms for quite a time while still carrying on his daily task, and only goes off duty when he has used up the reserves which enabled him to carry on in spite of his disability.

If this form of interchange were associated with post-graduate teaching, the medical profession would benefit, and the public to an even greater extent. The present system of hospital staffing is not the one best calculated to assist in the progress of medical knowledge. The young physician takes on the care of out-patients, and when he is older and more experienced he takes on the care of beds in the wards which are filled with the end-results of disease. If the situations were reversed and the senior men had charge of the out-patient department they might prevent many cases passing on to the in-patient stage of diseases, and the number of beds which needed their experienced care because of the rare diseases would not be great. No very special knowledge is required to deal with cases of advanced disease which occupy so large a proportion of medical beds. In time the junior staff would be promoted to the out-patient department.

I am, Sir, yours faithfully,
Bruce Bruce-Porter.

Grosvenor-street, W., Nov. 23rd, 1925.

MYOMECTOMY AS THE TREATMENT OF ELECTION FOR UTERINE FIBROIDS.

To the Editor of The Lancet.

Sir,—I suppose the majority of gynæcological surgeons are in agreement with Mr. Victor Bonney in his teaching that the uterus during the child-bearing period should be conserved if possible, and that it is possible in many cases at least to conserve the organ when the seat of fibroid formation, to the extent indeed of rendering future pregnancy possible in some, he has shown. But that myomectomy is of service and should be done after the climacteric is another question. The uterus at this time is presumably of no further use, is liable to serious disease, and the value of conserving it, to say the least, is questionable. The incidence of malignant disease of the uterus in the general population may be small, and not much greater or not greater in women with than in those without fibroids, but the danger is always there. When we think of the mortality of Wertheim's operation, even in expert hands, and the number of recurrences after this operation, it seems to me that the conservation of the uterus, the seat of fibroids in post-climacteric life, is carrying the art of surgery too far. If prophylactic pan-hysterectomy for slight and suspicious lesions of the cervix in such period of life is justifiable, as I think it is, much more reasonable, it seems to me, is the removal of the whole uterus when the seat of fibroids in such period. In this respect, the slightly greater risk of pan-hysterectomy compared with sub-total comes up for consideration. With the advance of pelvic surgery it can hardly be believed that the mortality and morbidity of the former operation is not greatly less at present than it was fifteen years ago. The position requires reviewing. Personally, I think the sub-total operation to-day is too often performed.

But however gynæcologists may view this subsidiary question, few, I think, will sympathise with Mr. Bonney's teaching or accept the reason he gives for conserving the uterus, the seat of fibroids, in some elderly women. In his series of 120 cases of all ages, he had three deaths. Two of these deaths occurred in "elderly women" in whom the "object of conserving the uterus was . . . to ventrofix it and make it act as an artificial ligament to hold up a prolapsed vaginal vault." Mr. Victor Bonney knows, or should know, as well as anyone else, that the uterus cannot be made to serve the purpose of a ligament to hold up the vaginal vault. Many instances have been cited of the uterus having been used in this way, but with the return to active life the same result has always occurred. If the "prolapse" is not prevented by other means, with resumption of general activity, the uterus elongates or the part of the abdominal wall to which its fundus is attached is depressed, the prolapse returning and the state of the patient becoming worse than before. The uterus as a suspensory agent is of no service in the prevention of pudendal hernia. It can only be of service if it can be used to play the part of a pessary (or an intra-corporeal truss), as in the interposition operation—in which, however, if malignant disease be feared, the endometrium can be removed.

It is unfortunate that Mr. Bonney should thus weaken his otherwise excellent argument.

I am, Sir, yours faithfully,
R. H. Paramore, F.R.C.S. Eng.

Rugby, Nov. 21st, 1925.

THE TROPHOBLASTIC HYPOTHESIS OF CANCER.

To the Editor of THE LANCET.

SIR,—Prof. Blair Bell's adoption without acknowledgment of the unfruitful trophoblastic (or chorionic) hypothesis of the nature of cancer, first put forward more than 20 years ago (THE LANCET, 1902, i., 1758) by my former teacher, the late Dr. John Beard, cannot be allowed to pass without remark from me. From that paper, in which the theory was outlined, the penultimate sentence may be quoted :—

> If such a chorion the representative more or less complete of the asexual generation, when robbed of its embryo or when it fails to form such, can—and this is established—give origin to a malignant carcinomatous tumour the nature of cancer is clear.

The patronising attitude towards other workers which pervades Dr. Bell's whole lecture comes ill from one who, it is charitable to assume, is himself ignorant of the recent literature of the subject.

I am, Sir, yours faithfully,

J. A. MURRAY.

Imperial Cancer Research Fund, 8, Queen-square,
W.C. Nov. 25th, 1925.

TELLING THE TRUTH.

To the Editor of THE LANCET.

SIR,—Doctors, in the course of their professional duties, have to tell many falsehoods, and now and again a discussion arises as to the ethics of professional lying, or rather, lying by a professional healer. It is not often, however, that such a witty defence of the professional lie is made as that published by Dr. Boutarel in a recent number of *Paris Médical*. After recalling the famous controversy, celebrated by Pascal in *Les Provinciales*, between the Jansenists and the Jesuits on the subject of restrictions of thought, Dr. Boutarel reminds us that in actual fact we all practise such restrictions. You borrow 50*s*. from a friend, saying : "I will pay you back," but adding, in your own mind, "if I have any money." The Jansenists would call this hypocrisy, the Jesuits diplomacy. Or again a dealer in antiques lays his hand on a piece of furniture, declaring solemnly : "I guarantee that this is old," but he carefully avoids touching the bronze corner-pieces which have just been added. "Disgracefully underhand !" cry the Jansenists. "Merely skilful," protest the casuists.

In the medical profession such restrictions are everyday affairs. Morphine, administered to a hopeless case, is termed "serum." The pretty wife of a faithless husband is assured that her husband has become infected through drinking out of a dirty glass. A bullet wound in the head is called a cerebral hæmorrhage, and so the pious falsehoods go on. Some doctors try to solve the insoluble by refusing a diagnosis in certain cases, but this is no real solution. *Qui ne dit mot consent* and to withhold a diagnosis is equivalent in some cases to making an accusation. With regard to professional confidences, there is only one attitude to take, thinks Dr. Boutarel, and that is for the doctor to keep sacred all secrets confided to him, even if questioned in a court of law. Should a medico-legal expert be called and should his evidence prove the correct diagnosis, and thus show up the doctor in charge of the case, the latter ought to be exonerated from any blame. Life without falsehoods would be insupportable ; we lie daily through politeness, through laziness, through self-interest, so why should we not lie occasionally in the interests of a third person ?

It seems to me that many besides Dr. Boutarel have found that a few lies, in the shape of half-truths, will sometimes go a long way towards effecting a cure.

I am, Sir, yours faithfully,

Nov. 22nd, 1925. CROIX ROUGE.

Obituary.

SIR ROBERT CHARLES BROWN, F.R.C.P. LOND., F.R.C.S. ENG.

Sir Robert Charles Brown, a well-known physician of Preston, Lancs, died at his residence in Winckley-square, Preston, on Nov. 23rd at the age of 89. He was a son of Alderman Robert Brown, F.R.C.S., and was born in Preston, where he received his early education. He pursued his medical studies at King's College Hospital, London, and in Edinburgh and Dublin, qualifying L.S.A. and M.R.C.S. Eng. in 1858. Three years later he obtained the M.B. Lond., and in 1862 was admitted F.R.C.S. Eng. by examination. In 1908 he was admitted a Fellow of the Royal College of Physicians. Throughout his professional career he was closely associated with the Preston Infirmary since its opening in 1870, as medical officer in his younger days and as a generous benefactor to its material needs in later years, besides holding the post of consulting medical officer. It was in recognition of his services to that and other institutions that he was made an hon. freeman of the borough in 1910. From the first he was closely connected with the work of the Cambridge Committee for the Study of Special Diseases. He promoted it in various ways, by personal effort and enlisting the support of others, by installing a complete X ray apparatus, by providing the most efficient microphotographic microscope obtainable, and, above all, by founding a studentship for pathological research. For these services the University of Cambridge conferred on him the hon. degree of M.A. in May, 1912, and on the following day he formally opened the Research Hospital built on the Hills-road. Sir Robert Brown was three times president of the Lancashire and Cheshire branch of the British Medical Association, and was an esquire of the Order of St. John of Jerusalem. He was knighted in 1919.

JOHN JAMES BLAGDEN, M.R.C.S. ENG.

BY the death of Dr. Blagden, Chester has lost one of its leading surgeons. He studied at St. Bartholomew's Hospital, London, and at Cambridge, graduating B.A. Camb. in 1893, and qualifying M.R.C.S. and L.R.C.P. in 1896. After qualifying he was assistant house surgeon at the Taunton and Somerset Hospital and honorary surgeon at the Tavistock Cottage Hospital. He settled in Chester nearly 30 years ago, where he was assistant honorary surgeon at the Chester Royal Infirmary from 1909 to 1919, when he was elected honorary surgeon to this institution. He retired last May owing to ill-health. During the war he rendered valuable service in orthopædic surgery as surgeon in charge of this department in Chester. He was a past president of the Chester Medical Society and chairman of the Chester Division of the British Medical Association. He leaves a widow and one son, who was recently called to the Bar.

MEMORIAL COTS AT VINCENT-SQUARE HOSPITAL.—Last week Mr. J. Gomer Berry, the chairman, formally accepted more than 20 "memorial cots" which have been given to the Infants Hospital in Vincent-square, Westminster. The Prudential Assurance Co. has given six cots in "The Prudential Ward," together with the installation of the X ray room.

ENLARGEMENT OF LONDONDERRY INFIRMARY.—The Duchess of Abercorn has this week opened the new Poston wing of Londonderry City and County Infirmary. The wing is named after two brothers, the late Robert and John Poston, who provided a large proportion of the cost. It will hold 25 patients, which brings up the total number of beds to 100. Accommodation is also provided for a resident surgeon, two house surgeons, the matron, six sisters, and 19 staff and probationer nurses. The infirmary, which dates from 1789, was last enlarged 20 years ago.

ROYAL ACADEMY OF MEDICINE IN IRELAND.

AT a recent meeting of the Section of Surgery held in the Royal College of Physicians of Ireland, with Mr. R. C. B. MAUNSELL, the President, in the chair, Mr. R. A. STONEY showed a woman of 30 who had suffered from all the clinical symptoms of exophthalmic goitre. In spite of rest in bed, sedatives, and Lugol's solution the pulse-rate, which at first fell, increased and the patient lost weight. Immediately before operation the basal metabolism was increased by 46 per cent. The patient was given rectal ether and the right lobe isthmus and lower half of the left lobe were removed. Three weeks after operation the basal metabolism had fallen to 27 per cent. below normal, the pulse had fallen and was steady. Tremors had almost entirely disappeared, exophthalmos had decreased, weight had increased, and the patient stated that she felt much better and was now eating and sleeping well.

Mr. H. STOKES said that he had operated on a good many cases of patients with exophthalmic goitre, and the results on the whole had been distinctly good. He had found that iodine acted very well; recently he had a patient whom he had put on iodine, and her pulse-rate had come down, but immediately he stopped the iodine her pulse went up again. He did not do lobectomy, but he took out a large portion of the centre of each lobe, after doing a preliminary ligature of the upper lobe. He had done about four or five such operations a year for the last few years. He had altogether operated on about 35 patients, and only two had died. One, a very bad case, did not recover from the anæsthetic, and the other died from septic pneumonia.

Dr. G. E. NESBITT said that it was sometimes stated that physicians were reluctant to give their patients with exophthalmic goitre over for operation. He did not think this was true, but they wanted more proof that operation was the best method of dealing with these cases. No mention had been made of the treatment by X rays, and he thought that most people if they got exophthalmic goitre would prefer to be treated in that way first. Good results certainly were often obtained by X ray treatment. At present he had a patient in hospital, a girl of 18, who on admission was practically moribund, and for some time it was impossible to do anything for her. When he managed to get her weight it was only 3 st. 8 lb. Later she had a course of X rays, and during this time she put on 9 lb. in weight. He now wondered whether she should have a further course of X rays or whether she should be operated on. She would not have stood an operation before, and he doubted if she would stand one now. He thought that it was very hard to judge how much thyroid should be removed in these cases.

Mr. H. MEADE said that he thought surgeons seldom get patients of exophthalmic goitre handed over to them early enough and so they really did not get a chance with them. If good results were to be obtained by operation it was necessary to operate early.

Mr. L. G. GUNN said that he saw a good many cases of goitre, and he would divide them into two classes, mild cases and really very severe cases. He had operated on 14 severe cases and two had died directly as a result of the operation. Of the other 12, two had shown a definite return of exophthalmic symptoms, one after five years and the other after eight years. He thought that probably he had not taken a sufficient amount of thyroid gland away; but he felt that even after surgery there was likely to be a certain amount of recurrence. A great deal depended on the patients; if a patient had only to do light work, or no work at all, then medical treatment and X rays might be given; but if the patient had to do hard work, then he would advise operation. He had seen a good many cases greatly improved after medical treatment, but very few of these had been fit to go back fairly soon to work, while after operation they were fit to work in quite a short time. Of course, sometimes quite a simple operation was followed by a very severe reaction, and even death.

THE IMPERIAL NURSING SERVICES.

THE name of the late Queen Alexandra is intimately associated with all the official nursing services of the Army, the Navy, and of India.

The committees of *Queen Alexandra's Imperial Military Nursing Service* and of the Territorial Army Nursing Service conjointly make up the *Queen Alexandra's Army Nursing Board*. This Board, formed in 1902, was constituted as follows:—

President: H.M. Queen Alexandra.

Vice-President: The Dowager Countess of Airlie, G.B.E.

Chairman: The Director-General, Army Medical Services.

Two members nominated by the President and holding office for three years.

Two members of the Advisory Board, Army Medical Service, one of whom is a civilian.

Four matrons of large civil hospitals with medical schools.

Matron-in-chief, Q.A.I.M.N.S.

Joint Secretaries: Matron-in-chief, T.A.N.S.; Principal Matron, Q.A.I.M.N.S.

The Board meets twice yearly, and is responsible for advising the Army Council in all matters affecting the Army Nursing Services. The Q.A.I.M.N.S. Committee meets monthly to deal with applications of candidates for the service, promotions, retirements, and reports of hospitals. The Board has not merely to advise in regard to the nursing of the soldier in peace, but has also to initiate schemes for the rapid and extensive expansion of the service on the outbreak of war. To meet these requirements a reserve of nurses has been formed. The T.A.N.S. Committee meets twice a year on the same day as the Board.

By Order in Council of March 6th, 1902, authority was obtained to designate the staff of nursing sisters in naval hospitals by the title of *Queen Alexandra's Royal Naval Nursing Service*. The present staff comprises three head sisters, eight superintending sisters, and 61 nursing sisters. Members serve at R.N. Hospitals at Haslar, Chatham, Plymouth, Portland, and Queensferry; R.N. Sick Quarters at Dartmouth and Shotley; and R.N. Hospitals abroad at Malta and Hong-Kong.

The *Queen Alexandra's Military Nursing Service for India* consists of a chief lady superintendent, a number of lady superintendents, and nursing sisters to the number required by the strength of British troops in India. The chief lady superintendent is an administrative official; the other members undertake the nursing of sick and wounded British soldiers, besides instructing the male nursing orderlies in nursing duties and supervising their work. The Nursing Service also supervise the management of the family hospitals, which exist for the care of the families of British officers and soldiers. A proposal is under consideration to amalgamate the Nursing Service for India with the Imperial Military Nursing Service, and to arrange for members of the combined service to proceed to India in the course of their career for a tour of duty with British troops, on the same system as that in force with regard to the Royal Army Medical Corps.

QUEEN ALEXANDRA'S LAST MESSAGE.—The annual meeting of Queen Victoria's Jubilee Institute for Nurses was held at St. James's Palace on Wednesday in last week. The Duke of Portland, who presided, read a message which he had received from Queen Alexandra wishing prosperity to the Institute, and expressing the hope that the financial outlook might continue to improve, and her thanks to all the workers for "the good cause which is so near to my heart." Mr. Neville Chamberlain, the Minister of Health, delivered an address in which he said that much of the money and work spent on medical services would be thrown away if it were not for the work of the district nurses.

Parliamentary Intelligence.

NOTES ON CURRENT TOPICS.

New Public Health Bill.

On Monday, Nov. 23rd, the House considered the Rating and Valuation Bill as amended in Standing Committee, and Mr. Barker moved a new clause to exempt underground sewers from rating. Mr. Neville Chamberlain said that he had much sympathy with the proposal to exempt from rating not only sewers, but also such things as pipes which conveyed water from a reservoir to a town many miles distant and which passed through the areas of different local authorities. While he could give no guarantee as to future legislation, he hoped next year it might be possible to introduce a Bill to amend the Public Health Acts and if so that might be a suitable opportunity to deal with the matter. The clause was negatived.

HOUSE OF COMMONS.

Wednesday, Nov. 18th.

Approved Societies and Dental Benefit.

Mr. Forrest asked the Minister of Health what were the types of benefits now being given by the approved societies, and especially how many of them provided dental benefit; and whether he was in a position to make specific recommendations to the societies as to the directions in which benefits should be given.—Mr. N. Chamberlain replied: The additional benefits which are now being provided by approved societies out of surpluses disclosed on a valuation include, in addition to increases of the standard rates of sickness, disablement and maternity benefits, dental benefit, ophthalmic benefit, treatment in convalescent homes, the provision of medical and surgical appliances, and payments to hospitals and for nursing. Dental benefit has already been adopted in England by 794 societies and 2662 branches, and these numbers will no doubt be increased when the whole of the schemes following the second valuation have been formulated. As regards the last part of the question it rests with each society to consider which of the additional benefits are best suited to the needs of its members, but any scheme adopted requires the sanction of the department before it can be brought into operation, and where a society's proposals are thought for any reason to be inappropriate recommendations for amendment are made to the society.

Reduction of Insurance Contributions.

Mr. Forrest asked the Minister of Health whether he was now in a position to make a definite statement as to the intentions of the Government regarding the proposal to reduce contributions under the National Health Insurance Act.—Mr. N. Chamberlain replied: The answer is in the negative. It will be remembered that a Royal Commission is at present investigating the National Health Insurance scheme.

British Social Hygiene Council.

Major-General Sir John Davidson asked the Minister of Health what was the amount of the grant given to the British Social Hygiene Council and what, if any, stipulations were made as to the manner in which it was expended.—Mr. N. Chamberlain replied: The amount of the grant paid to date during the current financial year is £5500. The grant is expended on the carrying out of a programme of educational work, the details of which have received the prior approval of my department.

Preventives for Venereal Disease.

Major-General Sir John Davidson asked the Minister of Health whether he was in a position yet to give any reply to the joint deputation of the National Council for Combating Venereal Disease and the Society for the Prevention of Venereal Disease received by him on March 5th, 1925, in relation to the alteration of the law regarding the sale by chemists of preventives for venereal disease.—Mr. N. Chamberlain replied: I would refer my hon. and gallant friend to the answer which I gave to his question of June 22nd. I am still awaiting a reply to the letter which I addressed to the two societies on May 15th last.

Geneva Opium Convention.

Mr. Campbell asked the Secretary of State for Foreign Affairs which of the powers had ratified the Opium Convention, signed at Geneva on Feb. 19th, 1925.—Mr. Chamberlain replied: No information has yet been received as to which powers, if any, have ratified the Convention. The period for signature only closed on Sept. 30th last.

Vaccination and Small-pox.

Mr. Groves asked the Minister of Health if he would give statistics, with such approximate accuracy as the available information permitted, showing the proportion of the population then living which had been vaccinated at public expense in each of the years 1852, 1853, 1854, 1871, 1872, 1882, 1883, 1884, 1902, 1903, 1904, 1922, 1923, and 1924, if figures for that year were available, and the number of deaths from small-pox in each year; and the number of cases of supposed small-pox notified in each year beginning with 1892.—Mr. N. Chamberlain replied: There are no statistics available showing what proportion of the population living in the years mentioned in the question had been vaccinated at public expense, but I would refer the hon. member to the figures given him on April 7th last as to the percentages of vaccinations to births, and the numbers of deaths from small-pox during each of the years 1872 to 1924. The deaths from small-pox during the years 1852, 1853, 1854 and 1871 numbered 7320, 3151, 2808, and 23,062 respectively. As regards the last part of the question particulars of the numbers of cases of small-pox notified are available only for the years 1911 onward, and the figures (excluding port sanitary cases) are as follows:—

1911	265	1916	135	1921	311
1912	111	1917	6	1922	967
1913	90	1918	51	1923	2477
1914	57	1919	262	1924	3757
1915	78	1920	243		

It should be understood that these figures represent not notifications only. They have not been subjected to the corrections and additions set forth in the small-pox section of the annual reports of the Chief Medical Officer of the Ministry of Health.

Panel Doctors and Medical Certificates.

Mr. Walter Baker asked the Minister of Health whether he was aware of the practice of panel doctors to charge for a medical certificate for a patient's private employer, such certificate being additional to that required by the patient's approved society; whether any provision was made under the Health Insurance Act for providing such additional certificate free of charge; and, if not, whether he would take steps to secure that some such provision is made.—Sir Kingsley Wood (Parliamentary Secretary to the Ministry of Health) replied: My right hon. friend is aware that such a charge is sometimes made, though he has no information as to the extent to which the practice prevails. There is no statutory provision for the issue of certificates other than those required for National Health Insurance purposes and the hon. Member's proposal would require legislation.

Registration of Nursing Homes.

Mr. Gerald Hurst asked the Minister of Health whether he would now appoint a Committee to inquire into the desirability of legislation for the purpose of registering and supervising nursing homes.—Sir Kingsley Wood replied: In view of the present pressure of work and the difficulty of completing the inquiry before the end of the session it is not proposed to proceed with the appointment of a Select Committee this year, but steps will be taken to set up the Committee at the earliest practicable date next session.

Transference of Pensions Work from Scotland to London.

Dr. Shiels asked the Minister of Pensions what was the exact nature and extent of the work formerly done in Scotland, and now transferred to the Ministry of Pensions in London; was it intended to carry this process further within any definite period, and would the Scottish Advisory Council be consulted before any such steps are taken in the future.—Mr. Thomas Kennedy asked the Minister of Pensions if he was aware of the very strong feeling aroused in Scotland by the intimation that the Scottish Regional Office of the Ministry of Pensions was to be closed, and the work now being done there transferred to London; and if he would concede the request of the Scottish Advisory Council that the decision to transfer the widows and dependants section to London should be delayed pending Parliamentary discussion of this proposal.—Lieut.-Colonel G. F. Stanley replied: The work transferred from the Ministry's sub-office in Edinburgh to London consisted in the handling of claims of widows and dependants referred from the area offices. The work involved formed only a small section of the work of the Regional Office in Edinburgh, as may be gauged by the fact that it occupied the time of only 22 clerks, or less than one-tenth of the Regional Office staff. The transfer of this small branch of the work, which has now been carried out, was directed by my right hon. friend for technical reasons. My right hon. friend must hold himself free, in the exercise of his responsibility as a minister, to make any change in administrative routine which he is satisfied will make for efficiency of administration consistently with the interests of pensioners. The re-centralisation of the entire work of the Regional Office in Edinburgh is, as already publicly stated, not in issue at the present moment, though the time is probably not far distant, according to present indications, when the decline in the volume of the Ministry's work will render the retention of a sub-office unjustifiable in Edinburgh, as has already been found to be the case in other parts of the United Kingdom. When, however, the time arrives for a decision to be taken, it is my right hon. friend's intention to give his Scottish Advisory Council an opportunity of expressing their views.

THURSDAY, NOV. 19TH.

Supply of Artificial Limbs.

Mr. **GEORGE HARVEY** asked the Minister of Pensions if he was aware that the number of contractors to the Ministry for artificial limbs had been recently reduced from 14 to 2, and special concessions made to those favoured 2 firms to the unreasonable detriment of the other 12; and was he prepared to reconsider his decision and meet a deputation from the remaining 12, whose businesses had consequently been necessarily seriously curtailed, if not actually closed down.—Mr. **ROBERT MORRISON** asked the Minister of Pensions why the number of firms supplying artificial limbs to disabled ex-Service men through the Ministry of Pensions had recently been limited to two.—Major **TRYON** replied: In consequence of refusal by the firms of limb makers hitherto under contract with the Ministry for the supply of artificial metal legs to continue to renew their contracts, except on terms which would have involved a greatly increased charge on public funds, I appointed a committee of inquiry, presided over by Sir Godfrey Collins, and including Major Cohen and other representatives of disabled officers and men, to investigate the whole position with regard to the supply and repair of this type of limb. Following the committee's report and recommendations, the number of firms with whom contracts were made for the supply and repair of artificial metal legs has been restricted to two. I have also received a deputation representing 10 of the 12 firms of limb makers who no longer hold contracts for the supply and repair of these limbs and have informed them that the matter cannot be reconsidered. The position is that certain firms had formed a combination against the Government, but, thanks to the committee, a cheaper supply of artificial limbs has been obtained.

In reply to further questions Major Tryon said that the limbs supplied were of first-rate quality. The House would wish him to express the debt of ex-Service men and of the country generally to the committee.

Bakers' Dermatitis.

Mr. **FORREST** asked the Home Secretary whether any legislation was contemplated in connexion with the spread of dermatitis among bakers, in view of the fact that operatives suffering from this disease were at present permitted to go on working with consequent risk to the consuming public.—Sir W. **JOYNSON-HICKS** replied: No legislation is contemplated, but the question of issuing an order requiring the occupiers to adopt special precautionary measures is now under consideration.

Colonel **DAY** asked the Minister of Health if he was aware that improvers, such as boric acid, used by bakers to improve bread, resulted in dermatitis; and whether, in view of this danger to public health, he would consider the advisability of making an order prohibiting the use of such improvers by bakers.—Mr. N. **CHAMBERLAIN** replied: The effect on the health of the consumer of the treatment of flour with "improvers" and other chemical substances is at present being investigated by a departmental committee, and pending their report I could not entertain a proposal to make restrictive regulations. I may add that so far as I am aware boric acid is never added to flour.

Increase in the Population.

Mr. **SANDEMAN** asked the Minister of Health what was the estimated increase of population in Great Britain since the last Census returns.—Mr. N. **CHAMBERLAIN** replied: The estimated increase of population in England and Wales from the date of the last Census in 1921 to the middle of 1925 is 1,003,000.

Smoke Abatement.

Sir **WALTER DE FRECE** asked the Minister of Health whether he proposed to introduce a Bill dealing with smoke abatement; and, if so, whether he could indicate when this would be.—Mr. N. **CHAMBERLAIN** replied: I hope to introduce a Bill on this subject next session.

The Case of Prince Ahmed.

Lieut.-Commander **KENWORTHY** asked the Minister of Health whether, when Prince Ahmed Seif-ed-Din escaped from Ticehurst asylum, detectives attached to the special branch of Scotland Yard were sent to France to effect his arrest; if he was aware that the prince had been confined in asylums in England since 1902 and that repeated efforts to have the patient examined by independent specialists had been refused; and whether he would make a statement on the subject, in view of the fact that the prince had established his sanity since leaving this country.—Mr. N. **CHAMBERLAIN** replied: I would ask the hon. and gallant Member to address the first part of his question to the Home Secretary. As regards the second part, I am informed that Prince Ahmed was confined in an asylum in this country from July, 1900, to September, 1925. During that period he has been frequently seen by medical and legal commissioners of the Board of Control. Within a year of his original detention a special visit was paid to him by a medical commissioner; and a similar visit was paid as recently as July, 1924, when the commissioner was satisfied that the prince was insane and properly detained. In September, 1924, the patient was examined by three independent specialists, two being eminent alienists of this country and one a specialist from Zurich. They also expressed the view that the prince was definitely of unsound mind. A further application for an examination by independent specialists was made to the Board in the same month, but was declined because it was considered that another medical inquisition at such a short interval might be detrimental to the patient's health. In regard to the third part of the question, I have no information relative to the statement that the prince has established his sanity since leaving the country; but I am advised that, judged by the standard of conduct recognised in this country, he was undoubtedly insane at the time of his escape.

Patients in Poor-law Hospitals.

Mr. **NAYLOR** asked the Minister of Health whether he would consider the advisability of introducing a Bill to remove the anomaly existing under the provisions of Section 46 (1) (*b*) of the Local Government Act, 1894, whereby members of boards of guardians and borough councils were disqualified from office owing to their entering or a member of their family entering a Poor-law hospital, notwithstanding that the full cost of maintenance was paid for the whole period of chargeability.—Mr. N. **CHAMBERLAIN** replied: I cannot see my way to introduce a Bill for this purpose at the present time.

Instruction in Birth Control.

Mr. **BASIL PETO** asked the Minister of Health whether he had received requests from electors in London and the provinces asking that advice and instruction on birth control should be given at maternity centres to married women on the recommendation of medical men; and whether these requests included many from medical officers of health and other persons in authority.—Mr. N. **CHAMBERLAIN** replied: The answer to the first part of the question is in the affirmative. As regards the second part I have no record of having received such a request from any medical officer of health, but a few have been received from magistrates, doctors, teachers, and other responsible persons.

Free Clinics for Cancer Treatment.

Mr. **FORREST** asked the Minister of Health whether, in connexion with the prevention of cancer, his attention had been drawn to the establishment in America of free clinics whereat all persons with suspicious growths were able to attend, whether he had ascertained if medical opinion in this country was in favour of the inauguration of such centres here; and, if so, whether he could give any estimate of what the cost would be.—Mr. N. **CHAMBERLAIN** replied: I am aware that certain free clinics have been established in the United States for the purpose indicated by the hon. Member. As regards this country, there are numerous out-patient departments of general hospitals and other medical institutions (specialised for the treatment of cancer or otherwise), at which persons who suspect that they are suffering from the early stages of cancer can receive gratuitous diagnosis, advice and treatment. In July, 1923, the Departmental Committee on Cancer, appointed by one of my predecessors, made certain recommendations as to the way in which local facilities for early diagnosis and treatment of this disease might be improved by local action. These recommendations were embodied in a circular issued by my department to local authorities on August 14th, 1923,[1] and are, I understand, now being followed in several of the larger cities.

Bethnal Green Medical Officer.

Lieut.-Colonel Sir **FREDERICK HALL** asked the Minister of Health whether, seeing that the Bethnal Green Metropolitan Borough Council recently approved a proposal for the appointment of a medical officer of health at a salary of £800, rising to £900 a year, and that his department intervened and expressed the view that the commencing salary should be not less than £1000, and in view of the recognised need for public economy and the fact that the salary offered by the borough council was considerably more than the income earned by a number of able, highly-trained general practitioners, he would state what were the general principles which had actuated the Ministry in taking this line.—Mr. N. Chamberlain replied: The salary first proposed by the borough council was considerably below the standard arrived at as appropriate to such an area after lengthy discussions between representatives of the Ministry of Health and of the British Medical Association and Society of Medical Officers of Health, with the assistance of advice from gentlemen of standing in the field of local government. In the circumstances I felt it impossible to approve the proposal of the authority and have sanctioned a temporary appointment.

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[1] THE LANCET, 1923, ii. p. 479.

Treatment of Encephalitis Lethargica.

Captain Hudson asked the Minister of Pensions how many ex-Service men were now in the Star and Garter Home for Disabled Soldiers and Sailors suffering from encephalitis lethargica; how many were receiving pensions on account of this disease; and how many wives of such men were receiving allowances.—Major G. C. Tryon replied: This institution is not under my control, and I am not therefore in a position to furnish the desired information, except as regards those cases for whose treatment in the institution my department is responsible. Three such cases suffering from the disease referred to are being maintained in the home at the cost of the Ministry. In each case the usual treatment allowances are being paid in lieu of pension.

Contamination of Fish.

Captain Fairfax asked the Minister of Health whether, in view of the fact that fish is moister than meat, and, for that reason, more liable to contamination and risk by and from flies and dust, he had considered or would consider applying to fish the provisions of the Public Health (Meat) Regulations, 1924.—Mr. N. Chamberlain replied: That part of the meat regulations dealing with inspection at the time of slaughter would obviously be inapplicable to fish. The conditions under which fish and other foods are stored or sold are now governed by Section 72 of the Public Health Act, 1925, which applies to fish (amongst other foods) the important provisions of the regulations dealing with the conditions under which meat is stored or sold in shops.

Monday, Nov. 23rd.

Indian Medical Service.

Mr. David Grenfell asked the Under Secretary of State for India whether the recommendations of the Lee Commission with regard to the substitution of the Indian Medical Service by the Civil Medical Service had been given effect to.—Earl Winterton replied: The recommendations of the Lee Report as to the constitution of Provincial Civil Medical Services have been accepted in principle, subject to the need for maintaining for army requirements a reserve of medical officers in civil employ, and for providing medical attendance by British doctors for British members of the Services. It has been decided to maintain the Indian Medical Service in substantially its present form to meet army requirements, and the Government of India are now considering how best to adapt the civil branch of the service to the general scheme of medical reorganisation.

Opium Conditions in India.

Mr. Cecil Wilson asked the Under Secretary of State for India whether there was any intention on the part of the Government to have an official inquiry into opium conditions generally in India; and, if so, whether he could give this House any information as to the nature and scope of the inquiry.—Earl Winterton replied: About the beginning of this year the Government of India addressed local governments, drawing attention to some prima facie evidence of abuses of opium in various directions, and asked them to examine the question and to consider with the Government of India by what kind of special inquiry or committee the problem should be dealt with if the local governments come to the conclusion that the evidence makes it desirable to review the conclusions of the Royal Commission of 1893. In September last the Government of India stated that they were still awaiting the replies of local governments.

The Government and the Amani Institute.

Mr. Ramsden asked the Secretary of State for the Colonies the policy of the Government with regard to the Amani Institute.—Mr. Amery replied: I am glad to be able to say that the governments of the East African territories are prepared to grant sufficient funds to enable the Institute to be reopened. The necessary capital expenditure in this connexion can be found from the proposed guaranteed loan for which a Bill will in due course be laid before Parliament. H.M. Government are fully alive to the importance of Amani for the future development of East Africa.

Yaws in Kenya Colony.

Mr. Herbert Williams asked the Secretary of State for the Colonies the total number of cases of yaws in Kenya Colony last year; and how many of these received adequate medical treatment.—Mr. Amery replied: 29,402 cases of yaws were treated at Government hospitals and dispensaries in Kenya during the year 1924; and, in addition, 16,125 cases were treated by Government medical officers while on tour in their districts, either at out-dispensaries or otherwise. I fear it is impossible to estimate the number of cases which did not come to the notice of medical officers.

Replying to a supplementary question by Lieut.-Colonel Fremantle as to whether the Amani Institute was investigating this disease, Mr. Amery said the Institute was established for the purpose of research in connexion with plants and agriculture, but he was very anxious to promote research in health questions as well.

Medical Men in Kenya.

Mr. Herbert Williams asked the Secretary of State for the Colonies the number of qualified medical men in the public service and in private practice in Kenya Colony.—Mr. Amery replied: According to a return published on Jan. 21st last, there were 76 registered medical practitioners resident in Kenya, of whom 32 were European Government medical officers.

Machinery Accidents.

Mr. Walter Baker asked the Home Secretary whether, having regard to the high total of deaths due to transmission machinery, it was proposed to introduce fresh legislation rendering owners or persons responsible for the machinery liable to imprisonment in the case of avoidable accidents.—Sir W. Joynson-Hicks replied: In cases where an accident is due to neglect of the occupier to comply with the requirements of the law, the occupier is liable to a maximum penalty of £100, but I find that this maximum is not often imposed, and I doubt whether a power to sentence to imprisonment would be of much practical use. Successful proceedings for failure to fence transmission machinery have been recently taken in a number of cases and important decisions as to the liability of occupiers have been obtained from the High Court. Special steps have also been taken to instruct occupiers by the issue of a Safety pamphlet on the subject, and I am hopeful that these measures may have the desired effect.

Pensioners and the Spahlinger Treatment.

Mr. Vernon Davies asked the Minister of Pensions whether the information available in his department regarding the Spahlinger treatment was yet sufficient to justify him in arranging for the provision of this form of treatment for pensioners suffering from tuberculosis.—Lieut.-Colonel G. F. Stanley (Parliamentary Secretary to the Ministry of Pensions) replied: No Sir. I would refer the hon. Member to the reply I gave on July 28th last. The matter is one primarily for the Ministry of Health. My right hon. friend understands that the case must still, for the present, be considered "not proven."

Evidence by Former Lunacy Patients.

Sir Charles Oman asked the Minister of Health whether any further evidence from former inmates of asylums was to be taken by the Royal Commission on Lunacy; and whether requests for permission to give such further evidence had been received by that Commission during the last few months and refused.—Mr. N. Chamberlain replied: I understand that the Royal Commission, having heard oral evidence from 13 former inmates of asylums and considered a large number of written statements, do not propose to take further evidence of this nature. During the last six months eight applications have been received from former inmates desiring to give oral evidence; but the Commissioners have been unable to comply with these requests.

Tuesday, Nov. 24th.

Alterations in Pensions Administration.

Mr. Robinson asked the Minister of Pensions what were the names and salaries of the regional directors in the Ministry of Pensions; how many, if any, were on part time; how many had received an intimation that their services might at an early date be dispensed with; and whether his department had under consideration such reorganisation of the administration as would involve the closing of all regions by June, 1926, and the centralisation of administrative work in the Ministry headquarters in London.—Lieut.-Colonel C. F. Stanley replied: On the completion of the recent realisation of the Midlands region on the 5th proximo there will remain only two regions, Northern, with headquarters at Newcastle-on-Tyne, and Scotland, with headquarters at Edinburgh. In the Northern region the duties of regional director have for many months past been combined with those of the Commissioner of Medical Services without increase in emoluments. In the Scotland region the regional director is at present required to give part-time service only and receives a salary of £600 per annum. His services cease at the end of next month, and thereafter the duties will be combined with those of the Commissioner of Medical Services without increase in that officer's emoluments. Recentralisation is the policy of the present Government, as it was of the last, and arrangements are already in contemplation for closing the headquarters of the Northern region early in 1926. No decision has yet been taken on the question of the recentralisation of the Scotland region, but, as I indicated on Nov. 18th, the time is not far distant, according to present indications, when the decline in the volume of the Ministry's work will render the retention of separate regional headquarters in Edinburgh unjustifiable.

Health of Merchant Seamen.

Mr. BENJAMIN SMITH asked the President of the Board of Trade whether he would arrange for an annual report to be issued regarding the health of merchant seamen, giving a scientific analysis of diseases in the statistics published in the Return of the Shipping Casualties to and Deaths on Vessels Registered in the United Kingdom; give information as to the total number of men serving amongst whom the deaths occurred; and, in view of the apparent absence of medical advisers in the department, would he consider whether the health of seamen was a responsibility which might with advantage be transferred to the Ministry of Health.—Sir P. CUNLIFFE-LISTER replied: I will consider whether the statistics for which the hon. Member now asks can be prepared, but I would call his attention to the replies given him on March 3rd last, of which I am sending him copies.

Tests for Motor Drivers.

Sir FRANK SANDERSON asked the Minister of Transport if he would introduce legislation making the granting of licences to automobile drivers conditional upon their passing a recognised test in driving.—Colonel WILFRID ASHLEY replied: As I have stated on previous occasions, I am disposed to agree with the conclusion arrived at by the Departmental Committee on the Taxation and Regulation of Road Vehicles, as stated in their second interim report, that any advantages which at first sight might appear likely to result from the institution of tests on the lines indicated would be outweighed by the expense, difficulties, and disadvantages inseparable from any such system.

Medical News.

SOCIETY OF APOTHECARIES OF LONDON.—At examinations held recently the following candidates passed in the undermentioned subjects:—

Surgery.—T. M. Beattie, Leeds; N. Cohen, Guy's Hosp.; S. E. Henty, King's Coll. Hosp.; M. Hook, Boston, U.S.A.; B. Horwitz, Guy's Hosp.; J. M. F. Whitby, St. Thomas's Hosp.; and D. Winstanley, Liverpool.

Medicine.—V. G. Crowley, Sydney and St. George's Hosp.; N. C. Ghose, Middlesex Hosp.; B. D. Jain, Charing Cross Hosp.; E. Kessel, Kharkov and Westminster Hosp.; and E. W. D. Long and J. Mindess, London Hosp.

Forensic Medicine.—M. Bannounah, A. M. El-Mishad, and C. L. Froehlich, Guy's Hosp.; M. Hook, Boston, U.S.A.; J. Mindess, London Hosp.; S. R. G. Pimm, Guy's Hosp.; L. A. Rostant, St. Thomas's Hosp.; and F. Widlake, Guy's Hosp.

Midwifery.—C. L. Froehlich, Guy's Hosp.; E. W. Hayward, Cambridge and London Hosp.; S. E. Henty, King's Coll. Hosp.; F. G. Martin, Charing Cross Hosp.; H. A. Sack, Middlesex Hosp.; and F. Widlake, Guy's Hosp.

The Diploma of the Society was granted to the following candidates entitling them to practise medicine, surgery, and midwifery: C. L. Froehlich, M. Hook, F. G. Martin, and D. Winstanley.

UNIVERSITY OF LONDON LECTURES.—A course of five lectures on the Physiological and Pathological Activities and Functions of Bacteria will be given by Dr. F. W. Twort (Superintendent of the Brown Institution) in the Theatre of the Royal College of Surgeons (Lincoln's Inn-fields, W.C.) on Dec. 7th, 8th, 10th, 11th, and 14th, at 4 P.M.—A course of two lectures on the Efficiency of the Heart and its Measurement will be given by Prof. Yandell Henderson (Professor of Applied Physiology in Yale University) in the Physiology Theatre, University College, London (Gower-street, W.C.), on Monday and Tuesday, Nov. 30th and Dec. 1st, at 4.30 P.M. At the first lecture the chair will be taken by Prof. E. H. Starling, F.R.S. Admission to these lectures is free, without ticket.

Charing Cross Hospital Medical School.—The Huxley Lecture on Recent Advances in Science, in their Relation to Practical Medicine, will be delivered by Sir Oliver Lodge, D.Sc., F.R.S., on Thursday, Dec. 3rd, at 3 P.M., in the Out-patients' Hall of the hospital.

UNIVERSITY OF CAMBRIDGE: *Chair of Physiology.*—The election of a successor to the late Prof. J. N. Langley will take place in December. Candidates are requested to communicate with the Vice-Chancellor not later than Dec. 14th.

UNIVERSITY OF MANCHESTER.—The Court of Governors have appointed Mr. Walter Hamilton Moberley, M.A., D.S.O., at present Principal of University College of the South-West of England, at Exeter, to succeed Sir Henry Miers in September next as vice-chancellor.

NATIONAL HEALTH SOCIETY.—Dr. Robert Hutchison will deliver the Lady Priestley Memorial Lecture on Diet in Childhood and Adolescence on Thursday, Dec. 3rd, at 5 P.M., at 90, Buckingham Palace-road, S.W. (the Royal Sanitary Institute), Sir James Crichton-Browne, M.D., F.R.S., in the chair.

LONDON (ROYAL FREE HOSPITAL) SCHOOL OF MEDICINE FOR WOMEN.—A dramatic entertainment in aid of the Jubilee Endowment Appeal Fund will be given by the staff of the school on Dec. 11th at 8.30 P.M., and Dec. 12th at 3 P.M., and again at 8 P.M., at 8, Hunter-street, London, W.C. Tickets, 5*s.* and 2*s.* 6*d.*, may be obtained from Miss Bond, 8, Hunter-street, London, W.C. 1.

METROPOLITAN ASYLUMS BOARD: DIPLOMA IN PUBLIC HEALTH.—A course of lectures and demonstrations (three months) in hospital administration will be given at the North-Western Hospital, Lawn-road, Hampstead, N.W., by Dr. E. W. Goodall (medical superintendent), on Mondays and Thursdays, at 4.45 P.M., and alternate Saturdays at 10.30 A.M., beginning Thursday, Jan. 7th, 1926.

SOCIETY OF MEMBERS OF THE ROYAL COLLEGE OF SURGEONS OF ENGLAND.—Sir John Bland-Sutton presided at the annual meeting of the Fellows and Members of this Society held at the College on Nov. 19th, when Dr. L. Haden Guest, M.P., moved the resolution which appeared in THE LANCET of Nov. 14th (p. 1043). It was, he said, inconceivable that in any other body than the College of Surgeons the same resolution should have been passed 36 times without notice being taken of it. All were agreed that the administration of the College had been and was being carried on in an exemplary manner, but the College owed a duty both to its members and to the public. The Council of the College had to deal with the conduct of examinations, the course of study, the choice of subjects, and the approval of schools and hospitals where instruction was given. The income of the College was derived to a large extent from its members, and he associated himself with those who advocated that the controlling body should be brought into closer touch with the general practitioner. Mr. F. Lawson Dodd, L.D.S., seconding the resolution, said that he represented the great unorganised mass of members who would like to have a closer union with the parent body. The result would be to give the College greater authority, a wider sanction, and more influence with the public. Dr. A. Haydon hoped it would be possible shortly to elect five members of the College on the Council, one for London and four for the provinces. Should this privilege not be granted he proposed the foundation of a new College of Surgeons with power to hold examinations and issue diplomas at lower fees than the present College. The resolution was carried with three dissentients. The President stated that the decision did not rest with him, but with the Council which was intending, before sending in the supplementary charter to the Privy Council, to give this matter very earnest consideration.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION.—On Monday, Nov. 30th, at 5.30 P.M., Mr. Herbert Tilley will lecture on Tuberculosis of the Larynx, in the lecture hall of the Medical Society of London, 11, Chandos-street, W. The lecture is free to all members of the medical profession. On Nov. 30th to Dec. 13th the Infants Hospital will hold a special course during the afternoons only, with the exception of Sunday, when a morning visit will take place to Thavies Inn, Holborn. Lectures and demonstrations will be given by Dr. Eric Pritchard and other members of the staff. Visits will be arranged to the Nursery Training School, Hampstead Garden Suburb, and the Home for Blind Babies, Chorley Wood. For the convenience of the general practitioner whose available time is limited, the Hampstead General Hospital will hold a 4.30 to 6 P.M. course from Dec. 7th to 19th, covering all branches of medicine, surgery, and the special departments. At the Hospital for Diseases of the Skin, Blackfriars, a course in dermatology will take place from Dec. 7th to 19th. Instruction will be given in the out-patient department, and venereal clinics will be held twice weekly. The following are the special courses for January:

Medicine, surgery, and the specialties at the Prince of Wales's General Hospital; cardiology at the National Hospital for Diseases of the Heart; diseases of children at the Queen's Hospital; infectious fevers at the North-Eastern Hospital; neurology at the West End Hospital for Nervous Diseases; and psychological medicine at the Bethlem Royal Hospital. A copy of each syllabus and the Fellowship general course programme will be forwarded on application to the Secretary to the Fellowship of Medicine, 1, Wimpole-street, London, W. 1.

Whitby's War Memorial Hospital.—Princess Mary on Nov. 18th opened a new cottage hospital at Whitby erected by the townspeople as a war memorial. For the new building—which has seven beds in the women's department, six in the men's ward, and three in the children's ward, besides four small wards with one bed in each—nearly £19,000 was raised to cover the cost of building and equipment. The operating block is the gift of Sir John Harrowing in memory of a son killed in the war.

Aimai Merwanji Chamarbagwala Free Ophthalmic Hospital.—The report of this institution for the year 1924 shows that it was started on a small scale in the year 1914 by two Bombay doctors. Its scope was enlarged in 1922 by the generosity of a Parsi gentleman after whose wife it is now named. In 1924 9200 new patients were treated. The number of cases operated on for cataract was 188, for glaucoma 26. The committee of management of this young institution consists of the two senior surgeons and the donor of the extension. It has an honorary staff of four and one house surgeon.

Manchester Cancer Committee.—The Manchester Cancer Committee has issued an appeal for £20,000 for the investigation into cancer during the next three years. The committee, which was formed at the instigation of the Minister of Health, numbers now 40 members, and consists of officially appointed representatives from the Public Health Committee, the University, the Manchester Royal Infirmary, the Christie Hospital, the Radium Institute, and other large hospitals in the city concerned with the problem of cancer in all its forms. The following scheme of investigation into cancer has been decided upon:—(1) Investigation of the blood and tissue changes in cancer cases by modern methods. (2) The collection of specimens from cancer cases for submission to a histologist for research purposes. (3) The establishment of a regular and complete system of record-keeping of cancer cases in all the city hospitals and in private practice. The occurrence of cancer amongst mule spinners gives the cotton manufacturing districts a special interest in any research work bearing on the investigation of the causes and increasing prevalence of cancer. The approved scheme will necessitate the appointment of full-time research workers and laboratory assistants and the provision of the necessary apparatus and clinical assistance. All money received will be expended entirely on investigations to be carried out in Manchester.

Queen Mary's Hospital for the East End, Stratford, E.—The twenty-second annual festival dinner of this hospital was held at the Hotel Victoria, Northumberland-avenue, on Nov. 23rd. Prince Henry, President of the hospital, had expressed the wish that the festival should not be postponed on account of the death of Queen Alexandra, and in his absence from the chair Lord Birkenhead presided over a large assembly of some 500 guests. The Chairman in giving the loyal toasts, briefly voiced the sympathy that all felt towards the Royal Family in their bereavement, and later in the evening made an eloquent appeal for funds on behalf of the hospital, for the maintenance of which £50.000 was required annually. Sir Leonard Lyle, chairman of the hospital, in response to Lord Birkenhead, said that there was a deficit of £7389 on the work of the past year, and that in future the expenses of the hospital would exceed the figure for 1924 by £9000 a year. Mr. H. Roper Barrett gave the toast of the honorary medical staff, the nursing staff, the voluntary workers, and officials of the hospital, to which Mr. A. J. Couzens and Major Raphael Jackson, the secretary, responded. In the course of his reply, Major Jackson announced that the sum of £5590 had already been received towards the total of £15,000, for which a special appeal was being made to free the hospital from debt and carry out a number of improvements. Sir Charles Wakefield gave the health of the Chairman of the Appeal Fund, Mr. H. Percy Shepherd, who himself headed the list of donors with a gift of £1000. The toast of the Visitors was given by Mr. W. A. Vernon, hon. treasurer of the hospital, and was acknowledged by the Mayor of West Ham. Sir Ernest Wild, K.C., proposed "The Chairman," to which Lord Birkenhead replied.

THE DEATH OF QUEEN ALEXANDRA.

Tribute of the General Medical Council.

At the first sitting of the General Medical Council, the President, Sir Donald MacAlister, paid a tribute to the late Queen Alexandra. The Council, he said, were meeting under the shadow of a national bereavement. "The death of the Queen-Mother Alexandra, revered and beloved by the whole nation, has made us all fellow-mourners with the Royal Family." Members rose in silence in homage to her memory.

Letter of Condolence from the British Medical Association.

The following letter, dated Nov. 24th, has been sent to Lord Stamfordham signed by the Chairman of Council of the British Medical Association:—

My Lord,—On behalf of the members of the British Medical Association throughout the Empire I respectfully beg leave to express to His Most Gracious Majesty the King, our Patron, Her Majesty the Queen, and the members of the Royal Family, the Association's heartfelt sympathy and profound sorrow at the death of Queen Alexandra, whose gracious thoughtfulness and unfailing devotion to the relief of suffering have endeared her to the profession. The Association joins with the whole Empire in mourning one so greatly beloved, and in expressing to His Majesty its loyalty and devotion.

I am, your Lordship's most obedient Servant,

(Sgd.) Robt. A. Bolam,
Chairman of Council.

Medical Diary.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

Tuesday, Dec. 1st.

ORTHOPÆDICS: at 8.30 P.M.
Discussion:
The Treatment of Fractures of the Forearm, Excluding Fractures of the Olecranon and those of the Lower End of the Radius of the Colles's Type.
Opener:
Mr. St.J. D. Buxton.
Mr. Bristow, Mr. Fairbank, Dr. James B. Mennell, Mr. Slesinger, and others will take part in the discussion.

PATHOLOGY: at 8.30 P.M.
Laboratory meeting at Guy's Hospital, S.E.
Communications:
Dr. G. W. Nicholson: Heterotopic Squamous-celled Carcinomata.
Dr. C. P. Symonds: Pathology of a case of Disseminated Sclerosis.
Mr. A. A. Osman: Treatment of Nephritis with Alkalies.
Prof. J. W. Eyre and Dr. Ali: *B. Ægypticus*, Rough and Smooth Colonies.
Mr. W. W. Payne: A Note on Various Carbohydrate Foods.
Demonstrations will be announced at the meeting.

Wednesday, Dec. 2nd.

SURGERY: at 8.30 P.M.
Clinical and Pathological Evening:
Cases and specimens will be shown.

Thursday, Dec. 3rd.

OBSTETRICS AND GYNÆCOLOGY: at 8 P.M.
Specimens:
Dr. Everard Williams:
(1) Fallopian Tube containing a Loose Fragment o Menstruating Endometrium associated with Endometrioma of the Ovaries.
(2) Uterus showing Multiple Polypi of the Cervix.
Short Communications:
Dr. D. J. Malan:
(1) Gliosarcoma in a Full-time Stillborn Fœtus.
(2) Ruptured Acute Pyosalpinx during the Third Month of Pregnancy.
Papers on Puerperal Sepsis:
(1) Dr. H. J. Phillips: Rational Treatment of Puerpera Infections.
(2) Dr. L. Colebrook: Some Laboratory Investigations i Connexion with Puerperal Sepsis.

Friday, Dec. 4th.

LARYNGOLOGY: at 5 P.M. (Cases at 4 P.M.)
Cases will be shown by Mr. H. Bell Tawse, Mr. A. J. Wright Mr. Douglas Guthrie, and others.

ANÆSTHETICS: at 8.30 P.M.
Paper:
Dr. M. S. Pembrey and Dr. F. E. Shipway: Apnœa Dyspnœa, and Cyanosis in Relation to Anæsthesia.

Saturday, Dec. 5th.

OTOLOGY: at 10.30 A.M. (Cases at 9.45 A.M.)

Cases and Specimens:

Dr. Albert A. Gray and Dr. Sarah B. Nelson: Pathological and Anatomical Conditions found in a Case of Deaf-mutism (illustrated by lantern slides).

Other cases and specimens will be shown.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W.

Monday, Nov. 30th, to Saturday, Dec. 5th.—Fellowship of Medicine lecture, Medical Society, 11, Chandos-st., W. Monday, 5.30 P.M., Mr. Herbert Tilley: Tuberculosis of Larynx.—Infants Hospital, Vincent-square, S.W. Special Course, Lectures, and Demonstrations every afternoon. Friday, "Round Table" Consultation. Saturday, Visits to Model Pasteurising Plant, Willesden, and Nursery Training School, Hampstead Garden Suburb.—Royal Waterloo Hospital, Waterloo-road, S.E. Special Course in Medicine, Surgery, and Gynæcology. Lectures, Demonstrations, &c., will be given in the Out-patient Department and Wards.—West End Hospital for Nervous Diseases, Welbeck-street, W. Lecture-demonstrations illustrated by cases daily at 5 P.M.—London Temperance Hospital, Hampstead-road, N.W. General Practitioners' Course, 4.30 to 6 P.M. (second week). All information as to fees, &c. from the Secretary.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N.

Thursday, Dec. 3rd.—3 P.M., Mr. W. Ibbotson: Demonstration of Practical Tests for Vertigo. 4.15 P.M. (Clinical Meeting of the North-East London Clinical Society).

Daily: Clinics, Demonstrations, Wards, and Out-patient Department, General and Special Departments, Operations, &c.

CENTRAL LONDON THROAT, NOSE AND EAR HOSPITAL, Gray's Inn-road, W.C. 1.

Friday, Dec. 4th.—4 P.M., Mr. Archer Ryland: Musculature of the Vocal Cords.

QUEEN CHARLOTTE'S MATERNITY HOSPITAL, Marylebone-road, N.W.

Thursday, Dec. 3rd.—5 P.M., Mr. L. C. Rivett: Antepartum Hæmorrhage.

LONDON SCHOOL OF DERMATOLOGY, St. John's Hospital, 49, Leicester-aquare, W.C.

Tuesday, Dec. 1st.—5 P.M., Dr. A. C. Roxburgh: Seborrhœa. Seborrhœic Dermatitis.

Thursday.—5 P.M., Dr. Haldin-Davis: Acne. Rosacea.

MANCHESTER ROYAL INFIRMARY POST-GRADUATE COURSE.

Tuesday, Dec. 1st.—4.15 P.M., Mr. W. R. Douglas: Ureteral Calculi.

Friday.—4.15 P.M., Prof. J. Shaw Dunn: Recent Work on Renal Function.

JAMES MACKENZIE INSTITUTE FOR CLINICAL RESEARCH, St. Andrews.

Tuesday, Dec. 1st.—4 P.M., Mr. M. Ramsay: The Ocular Complications of Diabetes.

ROYAL INSTITUTE OF PUBLIC HEALTH, 37, Russell-square, W.C.

Wednesday, Dec. 2nd.—4 P.M., Dr. A. Helen A. Boyle: The Attainment of Nervous and Mental Health.

Appointments.

Cohen, H., M.D. Liverp., has been appointed Lecturer in Practical Therapeutics in the University of Liverpool.

McFarland, B. L., M.B., Ch.B. Liverp., Honorary Assistant Orthopædic Surgeon to the Royal Liverpool Children's Hospital.

Vacancies.

For further information refer to the advertisement columns.

All Saints Hospital, Vauxhall Bridge-road, S.W.—Res. H.S. At rate of £200.

Birmingham and Midland Hospital for Skin and Urinary Diseases. Hon. Asst. P.

Birmingham Corporation Infectious Diseases Hospitals.—Sen. Asst. M.O. £500.

Birmingham, Queen's Hospital.—Anæsthetist, Obst. and Ophth. H.S. Also Cas. H.S. All at £70 to £100.

Bradford Royal Eye and Ear Hospital.—Res. H.S. £120.

Brighton, Hove, and Preston Dispensary, &c., 113, Queen's-road.—Hon. M.O.

Cairo, Memorial Ophthalmic Hospital, Giza.—Ophth. S. £E.1500.

Cambridge, Addenbrooke's Hospital.—H.S. £130.

Cardiff City Mental Hospital, Whitchurch, near Cardiff.—Locum Tenens. 7½ guineas weekly.

Cardiff, Welsh National School of Medicine.—Lecturer in Pathology. £750.

Chelsea Hospital for Women, Arthur-street, S.W.—Jun. H.S. At rate of £100.

Dumfries County Council.—Bacteriologist and Chemist. £650.

Essex County Council and U.D.C.'s of Grays Thurrock and Tilbury.—M.O.H. for U.D. of Grays Thurrock. £200. M.O.H. for U.D. of Tilbury. £200. And Asst. County M.O. for U.D. of Grays Thurrock, &c. £400.

Gloucestershire Royal Infirmary and Eye Institution.—Asst. H.S. At rate of £150.

Hampstead General and North-West London Hospital, Haverstock-hill, N.W.—H.S. and Cas. Surg. O. Each at rate of £100.

Hospital for Sick Children, Great Ormond-street, W.C.—H.S. and H.P. Each at rate of £50.

Iraq Health Department.—Two M.O.'s. Rs.1200.

Kirkcaldy Hospital.—Res. M.O. At rate of £125.

Leeds Maternity Hospital.—University Tutor in Obstetrics and Res. M.O. £300.

Manchester, Ancoats Hospital.—H.S. At rate of £100.

North Middlesex Hospital, Edmonton, N.—Res. M.O. £200.

Nottingham General Hospital.—Res. Cas. O. At rate of £200.

Rainhill, County Mental Hospital.—Temp. Asst. M.O. £7 7s. weekly.

Royal Free Hospital, Gray's Inn-road, W.C.—Surg. Reg. £200. Also Med. and Gynæcological Reg. £100.

St. Andrew's Hospital, Dollis Hill, N.W.—Hon. Asst. P. and Hon. Asst. Gynæcologist.

Salford Royal Hospital.—Res. Surg. O. £200.

Singapore, College of Medicine.—Prof. of Biochemistry and Prof. of Biology. Each $850–$1000.

Stockport, County Borough.—M.O.H. £1200.

University College Hospital, Gower-street, W.C.—Med. Reg. £150. Also Hon. Dental S.

Winchester, Royal Hampshire County Hospital.—H.S. £150.

Windsor, King Edward VII. Hospital.—Jun. H.S. At rate of £100.

York County Hospital.—H.P. £150.

Births, Marriages, and Deaths.

BIRTHS.

Allerton.—On Nov. 12th, the wife of George Allerton, *M.C.*, M.R.C.S., Longridge-road, S.W., of a daughter.

Cowen.—On Nov. 17th, at Stafford House, Church-road, Sutton, Surrey, the wife of Dr. E. G. Huxley Cowen, of a son.

Noble.—On Nov. 17th, at Hill Crest, Husbands Bosworth, Leicestershire, the wife of Dr. Noble, of a daughter.

Stewart.—On Nov. 10th, at Woodside, Leavesden, Herts, the wife of R. M. Stewart, M.D., of a daughter.

Trace.—On Nov. 3rd, the wife of Laurence A. Trace, L.D.S. R.C.S., Kingsbridge, South Devon, of a daughter.

MARRIAGES.

Scott—Richards.—On Nov. 12th, at St. Stephen's Church, Bournemouth, Dr. Maitland Scott, to Ursula, only daughter of Mrs. Richards, of Sunbury, St. Stephen's-road, Bournemouth.

DEATHS.

Canton.—On Nov. 19th, at The Corner Cottage, Ventnor, Frederick Arthur Canton, L.D.S. R.C.S. Eng., of Ludham, Norfolk, aged 75.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

London County Council School Medical and Dental Service.—The extent to which the school medical and dental service of the L.C.C. is developing may be gathered from the fact that the Council has made financial provision for treatment, during the year 1926–27, of no less than 35,000 cases of refraction and eye diseases, 14,680 ear, nose, and throat cases, 1500 cases of ringworm, 70,600 cases of minor ailments, and roughly 126,000 dental cases. These figures represent an increase of nearly 11,000 over the number of cases authorised for treatment in the current year. The medical services of the Council have recently been under review. It has been found that the large increase in the number of cases treated by the Council's doctors is largely due to the fact that the hospitals are experiencing difficulties, and are being used to a less extent than formerly in the case of ailments for which the Council provides treatment. It is stated that the in-patient centres for the treatment of tonsils and adenoids have become so popular that many parents now refuse immediate appointments for treatment of their children as hospital out-patients, and prefer to wait until they can secure treatment at one of the in-patient centres. More parents also now appreciate the importance of obtaining dental treatment for their children. The cost of the arrangements, apart from administrative charges, during the financial year is estimated at £94,827, which includes eye, ear, nose and throat (including ambulance), and ringworm, £22,298; minor ailments, £26,187; dental cases (treatment £39,604, inspection £3098), £42,702; maintenance grants (including Cyril Henry centre), £2260; allowances for use of centres for inspection purposes, £530; remedial exercises, £150; stammering classes, £200; and initial grants to new centres, £500.

Notes, Comments, and Abstracts.

THE TREATMENT OF ALCOHOLISM.

By Paul Bousfield, M.R.C.S. Eng.,
formerly physician to the london neurological clinic.

It is nearly always the case that when an individual approaches the doctor on the subject of the treatment of his alcoholic craving he does so at a time when he is almost without any control of the habit; that is to say, he is either in the middle of a drinking bout or an exacerbation of his chronic state. His physical condition has, therefore, to be dealt with first, so that we may confidently divide our treatment under two headings, physical and psychic.

Physical Treatment.

The physical treatment assists in substituting for the alcoholic euphoria a feeling of well-being without narcotising the brain. It also helps to eliminate the gastritis, which is one of the chief factors in driving the patient towards an early resource to alcohol on the day after he has taken excess, and which, thus, leads to a continued state of excess. It is not necessary to forbid alcohol completely at once. As a rule, however, it should be reduced and left off after two days' treatment, though in some cases it will be found better to immediately discontinue it. Although the treatment can be carried out at home, the patient should preferably be placed in a nursing home for from four to seven days. If the gastritis and general malaise are very bad it is well for the patient to remain in bed for the first 24 or 48 hours. Cheerful companionship is a great accessory, and if it can be afforded a special nurse of bright disposition or some other companion should be constantly available during the short stay in the home.

If the condition is very bad, and the patient comes in with a stomach loaded with alcohol, gr. 1/10 of apomorphine hydrochloride should be given hypodermically if the heart be in fair condition. This has a twofold object: it will probably induce vomiting, but, more important, it will probably give the patient a good long sleep. For apomorphine is a hypnotic of the greatest value in alcoholism. Further doses, 1/30 gr. to 1/20 gr., may be given at intervals of six to eight hours, and one of these doses should be given immediately before the patient retires to rest for the night. On the second day a small dose of apomorphine may be given in the morning and another at bed-time. These small doses will not induce vomiting except in rare instances. If a small dose does produce vomiting it must be discontinued and some other hypnotic substituted. Hyoscyamine sulphate followed by a full dose of potassium bromide is an excellent combination under these circumstances. As soon as the patient commences treatment he should be given a mixture such as will combine a general tonic with a stomachic and will simultaneously reduce his physical craving for alcohol. The best mixture to employ is probably the following, given at intervals of two hours and a half to three hours six times daily:—

Liq. atrop. sulph.	♏ ¼.
Liq. strychnin.	♏ i.
Tr. cinchonæ co.	ʒss.
Glycerin.	ʒss.
Inf. gent. co. .. ..ad.	℥ss.

After four days this atropine mixture should be discontinued, and a mixture somewhat similar to the following substituted, and ʒi. given two-hourly in a wineglass of water:—

Ext. cascara liq.	♏ x.
Tr. cinchonæ co.	ʒss.
Aloin.	gr. 1/16.
Liq. strych. hydrochlor.	♏ iii.
Inf. gent. co. .. ..ad.	ʒi.

This may well be varied after a week to the following:—

Ext. cascara liq.	♏ iii.
Aloin.	gr. 1/16.
Tr. cinchonæ co.	ʒss.
Inf. quassia (conc. 1–7)	♏ vii.ss.
Inf. gent. co. .. ..ad.	ʒi.

Colloidal Gold.

The remaining part of the physical treatment is empirical. It consists in giving 2 c.cm. per diem of isotonic colloidal gold. As a control the author has tested this on many occasions against different inert isotonic solutions similarly coloured without letting the patients know it, and the tests have left no doubt in his mind that those treated with gold picked up more rapidly, and were more successful, than the others. The dose of gold should be divided into three parts and given after each meal. It should be started as soon as the patient enters the nursing home and continued for three weeks. It is important that both the gold and the tonics should be divided up into frequent doses, for this rather burdensome method of treatment has a very considerable moral effect in assisting the patient to remove his fears from immediate relapse. After the first four or five days the actual desire for alcohol has ceased, but the fear of the desire does not disappear until experience has shown the patient how easy it is to abstain. This fear is a most potent form of tension acting as a cause for continued alcoholism. If at this stage the patient is solemnly warned not to touch alcohol again under any circumstances a fair proportion will be freed from its slavery. Unfortunately, however, conditions of tension will recur, which if they are not understood and controlled by the patient will cause a relapse. Probably rather more than 50 per cent. of the patients cured by this method do relapse.

Psychotherapy.

A much greater percentage of permanent cures is established when we add to this physical treatment some form of psychotherapy. As to suggestion it is almost impossible to make its effects last a long period against permanent tensions, although, of course, indirect suggestion plays a part in the physical method. Where alcoholism partakes of the nature of hysteria, or compulsion hysteria, or is symbolic in some way or other of an unconscious conflict, there is sometimes a very difficult proposition to face, which only a lengthy psychological analysis is likely to solve. It is amongst these patients that most of the failures occur, for many of them are not suitable for, and cannot enter into, analytical procedure.

But the vast majority of cases suffer from what may be termed a series of normal tensions, which they do not recognise as such consciously, but which are very near the surface, and can be fairly rapidly brought to light by a much more superficial form of analysis directed essentially to a minute examination into the history of his alcoholism, including an examination into the various emotional states of his mind which were present on various occasions when alcohol was taken. An example may be of value here.

An Example.

A civil engineer, aged 35, complained that he suffered from chronic alcoholism, and that it was hereditary in his family. He had suffered from it for 12 years, and had already undergone two forms of treatment for it. One of these had been at the Norwood Sanatorium and the other at the Keely Institute. After the first treatment he had been an abstainer for six months, and then considered himself safe, but a single drink was immediately followed by three months heavy drinking daily. He then went into the other institution, and on his discharge succeeded in maintaining three months' abstinence, when he had another relapse which lasted four months, after which period he came to me for further consultation. He was placed in a nursing home for five days, and the physical treatment already described was instituted. Simultaneously, a minute investigation into the history of his alcoholism was commenced. Various kinds of impatience were almost always the starting-point for his taking alcohol. Thus, if he had to wait an hour for a message to be delivered he would find the tension of waiting intolerable. If he had a long journey to make, the idea of the boredom of wasting several hours before he could get to the end of it had a similar effect. To arrive home half an hour before dinner with no fixed programme of work to fill up that time was another source of tension which he could not bear. Loneliness was another cause of unpleasant stimuli. He liked working with three or four people around, and analysis showed that the reason of this was in order that his work might receive continual attention and praise, and under these circumstances only could he really enjoy his work. There were a large number of similar conditions which aroused more tension in this individual than they did in the average person, or, in other words, this patient was too intolerant of these conditions. Other factors which made him drink heavily, when the first exciting stimuli had passed, were the fear of the ultimate consequences of his habit and the fear that he would never be cured. He was an example of the type that drinks in order to abolish the fear of drinking.

During this investigation, which took about eight weeks, the patient was taught to consider the various points, and to give himself well-considered suggestions night and morning directed towards his habits of impatience and exhibitionism (in his work and so forth). The suggestions were not directed towards eradicating his alcoholic habit, but towards his control of the underlying tension. He was daily impressed by the physician with the needlessness of fear concerning alcohol, and the fact that if he could entirely eliminate his desire for it in a few days in a nursing home he could certainly do the same for himself on any future occasion. He was disabused of the idea that alcohol was hereditary, and he was told that at the end of the treatment he must entirely use his own judgment as to whether he attempted to take alcohol again or not. If he did so and found that he had not got complete control, he must come back at once for a little further investigation of the particular circumstances which were causing him tension which he could not face. He did, in fact, have one or two short relapses for a few days each, but after a little further investigation he succeeded in pulling himself up short and curing himself by means of a little introspection and auto-suggestion on each occasion. He has now reached the stage in which he regularly has alcoholic beverages on his dinner-table, which, however, he scarcely ever touches. And he had not had a relapse of any kind for two years.

Conclusion.

Many cases are not so simple as this, and many patients cannot afford the time for the necessary analytic procedure. In such cases, however, although frequent minor relapses may take place, the patient is nearly always in a position to cure himself by taking a week-end holiday of three days with a suitable companion. In other words, he has sufficient confidence in himself to know that if he can put behind him for a short period the tensions of home life and business he can overcome, without the aid of a physician, the gastric tension and general malaise which are the chief causes in the continuation of a bout of drinking. A frequent cause of the beginning of a bout in these minor relapses is undischarged sexual tension. If for any reason this is raised and cannot be discharged, an individual who has been prone to alcoholism tends naturally to the old habit-path which has been formed in order to avoid the tension, although he may not be fully aware that the tension is present.

COLONIAL HEALTH REPORTS.

Unfederated Malay States.

Kedah.—The report of Mr. W. Peel, British Adviser, for 1924 gives the estimated population at 350,000. The birth-rate per mille was 31·70 and the death-rate 22·41. There was considerable improvement in infantile mortality, the rate being 126·27 per mille, as against 161·73 in the previous year. The number of deaths was 7877, of which 3459 were attributed to fever, but the returns are not very reliable. The only accurate figures are those for the hospitals. Eight Government hospitals were maintained and 13,657 patients treated therein. The principal diseases were malaria, venereal disease, ankylostomiasis, dysentery, pulmonary tuberculosis, and respiratory diseases. There was a marked increase in the number of dysentery cases, but the death-rate was considerably less. In addition to the outdoor departments at the hospitals, there are seven Government outdoor dispensaries; they did good work, the number of cases treated being 18,698. Small outbreaks of small-pox occurred in different parts of the State, involving 26 cases and 3 deaths; the outbreaks were quickly controlled. 7620 injections of neosalvarsan were given for puru (yaws), as against 1183 in the previous year; the people show eagerness for this treatment. There was a decrease in the number of deaths due to diseases connected with childbirth, but the prejudice against competent medical assistance in such cases remains very strong. 20 lepers were being maintained at the end of the year at Pulan Jerejak and 5 at Pulan Pangkor Laut. The accommodation at these places is limited, and 30 patients were awaiting vacancies at the end of the year. The position with regard to lepers is not satisfactory, and it may become necessary to consider one central camp for the State. Dr. D. Bridger officiated as State surgeon throughout the year. Dr. J. T. Clarke and Dr. R. B. Hawes acted as medical officers for Kulim and Sungei Patani respectively. Dr. C. J. S. Nicholas, assistant surgeon, officiated in the post of medical officer at Alor Star. A separate health department was maintained, Dr. A. G. H. Smart being in charge until he went on leave.

Trengganu.—This is a Malay State on the east coast of the Malay Peninsula. Its configuration is long and narrow, the length being approximately 150 miles and the greatest breadth 55 miles. The western and inland half is mountainous and almost uninhabited. The population is concentrated in the eastern half of the State, along the river-plains and coastal belt. The population at the census of 1921 was 153,765, of whom 145,523 were Malays, 7246 Chinese, 211 Indians, 34 Europeans, and other nationalities 751. The highest recorded annual rainfall on the coast is 165·5 inches; the average rainfall is about 120 inches. In the coastal region the regular sea and land breezes modify the heat, which is never at any time oppressive, and the climate is both pleasant and healthy. Mr. J. L. Humphreys, the British Adviser, in his report for 1924, states that Dr. A. B. Jesser-Coope (medical officer) and Mr. Ibrahim Syed Noor (assistant medical officer) were in charge throughout the year, with a staff of eight dressers and apprentice dressers. The department was transferred in February to the completed new administrative buildings; they include store, dispensary, dressing-rooms, laboratory, and a well-equipped operating theatre. The hospital ward was completed and brought into operation in May; the second ward was completed in November; 158 cases were treated in the hospital during the year. Two major and 35 minor surgical operations were performed, and 1147 clinical pathological examinations made. Lunatic cells, a leper ward, and a vagrants' ward are under construction. The total area of the medical department reserve is approximately 18 acres of land; the site is open sandy ground, just outside town limits, and within half a mile of the sea. The commissioner of police made arrangements for the distribution through 15 police stations of drugs for simple ailments (fever, wounds, worms, sores), and a Jawi booklet of instruction on common matters of sanitation, hygiene, and infant feeding was published during the year. It is hoped that these measures will encourage the use of European medicines and help to bring the medical department more into touch with the general population. No vital statistics can be given. Of general diseases treated the more prevalent were skin diseases, intestinal worms, bacillary dysentery, diseases of respiration, yaws, and influenza. Venereal disease is not common; many cases formerly thought to be tertiary syphilis are now considered to be tertiary yaws. There was no epidemic at Kuala Trengganu during the year. There were epidemics of influenza at Kretai in July, and of bacillary dysentery at Kuala Brang in August; they were cleared up with aid sent from Kuala Trengganu. The vaccination campaign was continued during the year, 12,890 cases being successfully treated (19,750 in 1923). At the end of the year the vaccination of the whole State was completed, except for Hulu Marang and Telemong, where some opposition from religious pundits was again met with.

Perlis.—In 1924, 851 births were registered, comprising 750 Malays, 28 Siamese, 69 Chinese, 3 Tamils, and 1 Sikh. The deaths numbered 585. The number of indoor patients in the Kangar hospital was 549, and the percentage of deaths was 6·57; or, if deaths occurring within 48 hours of admission are excluded, 4·91. The daily average of in-patients was 37·46. The principal diseases treated were malaria, dysentery, phthisis, other lung complaints, ankylostomiasis, syphilis, and ulcers. The number of out-patients rose from 11,991 to 12,543. It is satisfactory to observe that Malays are taking outdoor treatment very freely. A travelling dispensary was started during the year. It distributes quinine, treats ulcers and other simple complaints, and is well patronised. Neosalvarsan injections numbered 3409, against 2027 in the previous year.

INSECTS AND PUBLIC HEALTH.

On Nov. 18th Sir Wilfred Beveridge delivered a Chadwick Public Lecture at the Royal Society of Medicine on Insects in Relation to Public Health. Sir James Crichton-Browne occupied the chair. After referring to the general educative value of the study of insect life, Sir Wilfred Beveridge said that training in entomology was very desirable for every medical man. To be of real value this training should be of such wide scope as to confer the true entomological sense, which enables the student to tackle any new problem which may arise. The chief function of insects in nature, he said, appears to be the destruction of waste and putrescent organic matter and the suppression of superabundant vegetation. At the present time we devote much attention to the destruction of the house-fly and the carrion flies because they can under some circumstances transmit certain disease germs; but if man took the proper precautions as to the disposal of infected excreta and the protection of food, the fly would not be in the unfortunate position of being a disease carrier. We should so regulate our sanitary efforts as to make the insect carrier a negligible factor in the transmission of disease, and not concentrate all our energy in destroying insect life, while failing to put our own house in order. The presence of lice was one of the many trials of the war, and great temporary loss of man power was caused by trench fever, a disease new to active service in the field, which was definitely proved to be transmitted by the louse, and the louse only. It was estimated that at least 50 per cent. of the total sick admissions among troops in the line was primarily due to the presence of vermin, and arrangements have now been made to provide mobile laundries and bathing units for an army in the field, so that in future wars the men with care should be kept entirely free from vermin. Unfortunately, however, vermin are only too common in the civil population, though by the avoidance of overcrowding and the observance of ordinary cleanliness they can be eradicated entirely.

It is quite possible that the list of insects now known to be responsible for transmitting disease will be increased, and a closer study of many household insect pests certainly appears desirable. It has been estimated in the United

States of America that the loss of labour by all insect diseases costs the country over 300,000,000 dollars each year. During the war demands for repellants against lice, mosquitoes, and sand flies were constant and pressing, and the result of trials in many theatres of war left a feeling of doubt as to their practical value; many of them were very expensive and some difficult to obtain. To sift the problem properly, and to extricate from a mass of substances expected to act as efficient insecticides and repellants those which are reliable and effective under conditions of service in various countries, it would be necessary to institute an experimental station, where the various necessary insects can be bred and maintained, so as to determine the value and action of insecticides and repellants, not only from a personal but also from an economic point of view. The bed-rock of control, said Sir Wilfred Beveridge, is efficient sanitation. The protection of food during manufacture and on exposure for sale is greatly neglected both in this country and abroad. Food is exposed to contamination by flies in shops and on the streets, in kitchens and stores, with little attempt at protection. In America, Canada, and Australia regulations are in force to prevent the contamination of food by exposure, and no food is allowed to be exposed for sale unless screened by glass or gauze. In houses the protection of food is a simple matter. The provision of screened meat safes, the screening of our store-rooms and kitchens, and the use of gauze coverings for cooked food set aside, such as those now sold as "fly foilers," is not an expensive matter and should never be neglected.

CHILD WELFARE PROPAGANDA.

A MEETING of the National Baby Week Council was held at Carnegie House on Nov. 18th, the chair being taken by Dr. W. J. Howarth in the absence of Prof. Bostock Hill. The subject for discussion was Propaganda by Local Authorities: Ways, Means, and Costs, and Dr. Howarth said that under the new Public Health Act local authorities were empowered to spend money on health propaganda, thus opening up opportunities not available hitherto. Dr. W. Allen Daley (M.O.H., Kingston-upon-Hull) spoke of various methods of health propaganda. Newspaper publicity was perhaps the most valuable, as nearly every home possessed one diligent reader of the paper who handed on news to the others and stored up information for future use. Health bulletins issued by public health departments were useful, but could only be afforded by the larger authorities. There was need for a central committee to act as a publicity and information bureau, to standardise the publications issued, so that none might show serious deviation from the general consensus of medical opinion. At a cost of from £10 to £20 a lecture, and by securing really good lecturers, Dr. Daley had found it possible to collect audiences of from 1000 to 3000, the most popular lectures being those illustrated by films. Health talks by panel doctors to their patients would be a paying proposition, and two doctors in Hull were adopting this plan. Posters were costly but useful, and broadcasting, health week exhibitions, and education of school-children were all valuable. Dr. James Fenton (M.O.H., Kensington) called attention to the fact that London was not included in the provisions of Section 67 of the Public Health Act. London boroughs did not enjoy the local patriotism enjoyed by towns, and the difficulty was rather to attract audiences than to obtain good lecturers. The ideal was to use the infant welfare centres as propaganda units and to make them educational centres. The Kensington Council had just appointed a whole-time woman lecturer, approved by the Ministry of Health, but, until the new Act applied to London, she would have to confine her efforts to maternity and child welfare. Groups of people considered by members of the audience to be in need of health education included municipal councillors, corporation officials—policemen, tramwaymen, and the like—and adolescent boys and girls.

A VISITING LIST FOR 1926.

Smith's Physicians and Surgeons' Visiting List,[1] consisting of diary, almanac, and book of engagements for 1926, appears this year for the eightieth time. A pocket-book which has not only satisfied three generations of practitioners, but has been modified by their friendly criticisms and has been constantly kept up to date in form, contents, and spacing carries its own recommendation. After the diary, which takes up the bulk of the book, come special sections for obstetric and vaccination engagements, memoranda, bills and accounts asked for, addresses of patients and of nurses, drugs and instruments wanted, and finally a list of things lent with space for name and address of the borrower. A medical man who uses the facilities here provided to their fullest extent cannot fail to profit by their methodical arrangement.

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[1] Smith's Medical Visiting Lists for 1926. London: Hazell, Watson & Viney, Ld., 52, Long Acre, London, W.C. Price, No. 3 for 75 patients (with journal), cloth 7*s.* 6*d.*, leather 10*s.* 6*d.*; No. 4 for 100 patients (without journal), cloth 10*s.*, leather 12*s.*

MALARIAL TOXIN.

Dr. I. Pentman, writing from the Pathological Institute at Omsk [1] in Western Siberia, relates the case of a boy of 10 who died comatose in a relapse of tertian (benign) malaria. Post-mortem examination showed that he had no other disease, and only *P. vivax* was found in his blood. There was degeneration and proliferation of the endothelium of the blood-vessels of the brain, also small hæmorrhages in the medulla and elsewhere, which accounted for the clinical symptoms. Dr. Pentman attributes this alteration of the endothelial cells to a definite malarial toxin, quoting in his support Pewnitsky (1903) and also Dürck in the German Medical History of the War. This toxin, even in quite acute cases, may cause waxy change in the kidneys and spleen, but not in the liver.

ROAD WISDOM.

THE familiar maxims known as "Pratt-itudes of the Road," which have recently appeared in the press, have been collected into a neat pamphlet under the title of "Road Wisdom," together with hints on garages, traffic driving, gear changing, and other subjects by expert motorists. The courtesy of the road still leaves something to be desired, and the little book contains useful reminders of road ethics. It may be had free on application to the Anglo-American Oil Co., Ltd., at 36, Queen Anne's-gate, London, S.W. 1.

A MISSION HOSPITAL IN NORTH CHINA.

THE Mosse Memorial Hospital at Ta Tung Fu, Shan Si, North China, was built as a memorial to the Rev. E. H. Mosse, who was killed by a bomb during an air raid in the neighbourhood of Covent Garden in 1918. The first annual report, dated 1924, is addressed to medical men and shows that during the year 1896 men and 568 women were treated as out-patients, a total of 2464 with return visits of 4272, making a total of 6736 attendances. There were 396 in-patients, of whom 329 were men and 67 women. Several cases necessitated abdominal surgery and there was a large amount of surgical tuberculosis, though the results of treatment in this last category were very poor. Trachoma, as might be expected, formed the bulk of the eye patients. The majority of operations were done under local or sacral anæsthesia, the latter for rectal operations. Severe rickets and osteomalacia are common and severe in the out-patient department, where syphilis is found to be widespread and the treatment of gonorrhœa is unsatisfactory as patients do not persevere. Most skin cases are syphilitic and scabies is frequent. The staff consists at present of Dr. D. S. Bryan-Brown, Dr. G. A. M. Hall, and a nursing sister with native assistants. A nursing school is in prospect.

QUICK REFERENCE.

TIRESOME as they may sometimes be, statistics are indispensable; they are the social worker's raw material, and they furnish the test of progress. The Permanent Consultative Committee on Official Statistics, set up by the Treasury in 1921, has just produced its third annual survey, covering the contents of all the official publications of 1924 and of some of those of 1925. The new volume[2] consists of two sections. The first and larger is a subject index with a comprehensive system of subheads and cross-references. The guide covers the whole field of official activities, from accidents and afforestation to women police and wrecks, but one has only to glance at titles such as children, deaths, disease, health, and so on, to see what valuable compilations of statistics are available of a kind likely to interest the medical profession. There are also of course, more specialised headings, such as factories and workshops, industrial fatigue, prostitution, vaccination and workmen's compensation—to name a few samples taken almost at random—which indicate the varied nature of the mass of information which our blue-books and other official publications contain. The second section comprises a list of those publications to which the subject index has referred. Medical practitioners and students of public health administration have seldom the leisure to read and digest the colossal output of departmental reports and returns, census figures, Royal Commissions' reports, and similar literature which H.M. Stationery Office pours forth. The less time they have, the more valuable is such a guide as this.

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[1] Arch. f. Schiffs- u. Tropen-Hygiene, September, 1925.

[2] Guide to Current Official Statistics of the United Kingdom, Voume III. (1924). London: H.M. Stationery Office. 1925. Pp. 249. 1*s.*

CHEYNE HOSPITAL FOR CHILDREN.—An exhibition and auction sale of oil and water colour paintings, drawings, engravings, jewellery, &c., in aid of the Cheyne Hospital for Children last week realised £750.

An Address
ON THE
CASE FOR THE UNBORN CHILD.

Being the David Lloyd Roberts Lecture delivered at St. Mary's Hospital, Manchester, on Nov. 17th, 1925,

By THOMAS WATTS EDEN, F.R.C.S. Edin.,
F.R.C.P. Lond.,
CONSULTING OBSTETRIC PHYSICIAN, CHARING CROSS HOSPITAL, LONDON.

It is universally accepted among us that the care of infants and young children is one of the chief concerns of the State and of society. Public interest in the matter has been one of the main forces behind those developments which in the last 25 years have brought down our infant mortality-rate from 154 to 75 per 1000. I am asking you on this occasion to consider to what extent we as medical practitioners are also concerned with the well-being of the child before birth. French obstetricians have for many years been much more concerned about all matters pertaining to infant mortality than we have, on account of their falling birth-rate, which has now reached a point at which the depopulation of that country may be said to have commenced. With their well-known gift for regarding questions in a strictly logical manner, the French have taken wide views, and many years ago Adolphe Pinard[1] pointed out that in reality the preservation of child life, or as they call it puériculture, to which there is no exact English equivalent, must be considered in relation to three periods.

(1) The *pre-conceptional period*, in which the seed to be sown and the soil in which it is to germinate are the elements concerned; (2) the *intrauterine period*, in which development is carried from the blastomere stage up to the birth of the fully developed infant; (3) the *postnatal stage*.

With the preconceptional period we are not now concerned; in this field the eugenists would like to experiment, selecting and allotting candidates for marriage mainly from the point of view of their suitability for breeding, and scarcely at all from the point of view of individual preferences, tastes, or disposition. To this field belong such interesting questions as the varying degrees of fertility of different races, the causes which underlie the dying-out of some families, and the rapid multiplication of others. Nor need we enter the domain of the pædiatrician and discuss the questions associated with infant mortality and morbidity. It is Pinard's second period which concerns us—viz., that in which the child is developing in the uterus; this period is under the care of the obstetric department of medical practice. It is therefore part of our duty to consider whether there is anything we can do, and if so what, to ensure that the intrauterine child is given the best chance of completing its development, and entering upon its separate existence under the most favourable possible conditions. Strictly speaking, this period of the child's existence includes the birth process as well, and we cannot entirely overlook, in our review of the subject, the risks to which the child is subjected in the birth-process, although it will not be necessary to enter into much detail in that particular.

The subject obviously forms a branch of what is known now as antenatal work; usually this work is looked upon as being concerned with the expectant mother, and as such it is now understood and welcomed by the public. Antenatal work should not be regarded only as a maternal safeguard, although its primary object is to ensure that the expectant mother gets through her pregnancy with the minimum of risk, and that she enters upon her labour under the most favourable obstetrical conditions. The steady, although slight, diminution which has occurred in the total maternal mortality of childbearing—i.e., the mortality from all causes—during the last 20 years, and is still continuing, is due at any rate in part to widespread establishment of antenatal clinics, and to the enthusiastic band of medical and lay assistants who work these clinics. I think I can show, however, that the fœtal and infantile mortality of pregnancy and labour is appallingly high, and unless we regard this aspect of childbearing on its merits, and as distinct from, although supplementary to, the maternal risks, we shall fail to realise its great importance.

Antenatal Care as Affecting the Child in Utero.

The question I am asking you to consider then is to what extent can antenatal care of the mother influence the well-being of the child in utero? Can we in any degree safeguard it against the risks of intrauterine death? or against premature expulsion either when non-viable, or later on when viable but heavily handicapped by prematurity? or from grave defects of development? or from transmitted intrauterine disease? or from the perils of the birth process? We have, perhaps, in the past been too much inclined to wash our hands of all responsibility for the child until it is born. We have considered its fate as lying in the hands of the two great forces which control development—viz., heredity and environment—forces which may well at first sight appear to be beyond our control. Heredity we must not stop to consider; environment, on the other hand, we should certainly consider carefully, making use of the term in its broadest possible signification.

The child in utero leads an extraordinarily sheltered existence, and can only be affected through the mother. Generally speaking, the relation of the fœtus to the mother is that of a parasite to its host, although Ballantyne, who did so much to arouse interest in the unborn child, inclined to the view that the relationship was a *symbiosis*—i.e., a kind of compromise in which parasite and host become of service to each other. The mechanism by which the embryo is formed, and the various stages of its organogenesis are completed, is an intrinsic embryonic mechanism. The embryo needs only food and shelter; given these necessaries it works out its own development. Should the supply of nutriment to the embryo be deficient in quantity or quality, or should it fall under the influence of poisonous substances which reach it from the mother's blood, or should its resting place be subject to injury from without, the environment will be so modified as to deflect the normal course of development and perhaps to render the continued existence of the embryo impossible. The number of infectious diseases which can be transmitted to the fœtus through the placenta is a very large one, and no useful purpose would be served by my detailing them to you. In some other conditions, such as the pregnancy toxæmias and chronic renal disease, the placenta may be damaged to such an extent as to cause the death of the fœtus. We know little or nothing of the effect which minor departures of maternal health produce upon the placental exchanges.

It is, perhaps, not unreasonable to suppose that not only what the pregnant woman eats and drinks, and the air she breathes, but also her occupations and even her emotions, may exert an influence upon the child in her womb. We know that the state of the circulation may be profoundly influenced through the nervous system, and the character of the glandular secretions may be modified by psychical influences. I have not time to mention instances of these changes, but given their occurrence in a pregnant woman it is not unreasonable to suppose that the placental interchanges may be modified by them. It may be a long time before we are able to estimate the degree of importance which should be attached to considerations such as these which are in the meantime merely speculative, but we shall, as we proceed, find reason to admit that the placental interchanges probably cover much that cannot properly be included in the functions of nutrition and respiration.

Next to the welfare of the mother our great concern in antenatal work is that the child should complete its proper period of intrauterine development and be born not only alive, but with the best possible chance of survival. Let us first of all consider what are the present chances of the child completing its intrauterine development and being born alive. It may be cut off either by miscarriage or by stillbirth; and further, if born alive, it may be born in a condition which renders its survival impossible, or at the best a matter of great uncertainty.

As regards the frequency of miscarriages there are, of course, no official figures in this or any other country. Some years ago my colleague, Dr. Amand Routh,[1a] attempted to estimate the frequency of miscarriages, partly from the experience of several clinical observers, and partly from returns obtained from certain cities in the U.S.A. His figures indicated that almost one in five of all pregnancies terminated in miscarriage. If this figure is to be accepted for our own country it would follow that in England and Wales in the year 1924 something like 190,000 pregnancies terminated in miscarriage. I do not suggest that we should accept this figure without reservation, but there can be no doubt that miscarriage is a very frequent occurrence.

Regarding stillbirth there is information available in this country but it is limited. We know the number of stillbirths notified under the Notification of Births Act, but no information as to the cause of death is given for stillbirths at all. Another source is the returns which are published by some but not by all of our lying-in hospitals. According to the report for 1924 of the chief medical officer to the Ministry of Health, over 25,000 stillbirths were notified in that year. This corresponds to a rate of 3·3 per cent. of live births. The total maternal mortality of child-bearing for the same year was 3·7 per 1000 live births, so that the stillbirth-rate alone, and taking no account of miscarriages, was roughly ten times greater than the total maternal mortality.

In France in the year 1922, according to Couvelaire,[2] the proportion of registered stillbirths (and only those are included which had passed the sixth month) amounted to 44 per 1000 live births. The same author shows that in France it is in the great centres of population that the highest stillbirth-rate is found; Paris had a rate in that year of 93 per 1000; a group of large towns a rate of 69 per 1000; rural departments only 26 per 1000. Fœtal death is, however, not the only consideration to be borne in mind. Many infants born alive die in the very early days of the neonatal period from injury received in labour, from prematurity, from disease, or from debility of unknown origin. It is clear, therefore, that if we are properly to envisage the problem of prevention we must endeavour to bring into view all the conditions which are capable of influencing the well-being of the child during its intrauterine development.

Ballantyne [3] divided the duration of intrauterine life into three periods, and it will be a help to us to make use of his classification. The three periods were: first, the *embryonic period*, which extends from the act of fertilisation to the end of the eighth week; second, the *fœtal period*, from the end of the eighth week to the onset of labour; third, the *intranatal period*, comprising the birth process itself.

1. THE EMBRYONIC PERIOD.

The embryonic period is that in which are laid down the sex of the offspring, its inheritance of hereditary characters, and the general plan of all the organs of the body. Ballantyne also speaks of it as the organo-genetic period. Sex and inheritance are decided, according to modern views of development, at the moment of the first segmentation of the fertilised ovum. Malformations of all kinds are initiated in the embryonic period. The mechanism by which the sex of the individual is determined and also its inheritance of hereditary characters, in view of recent biological advances is now clearer than it has ever been before; it even appears to be not impossible that experimental means may be found of altering the sex ratio, that is, the proportion of males to females, in the case of some creatures such as insects. It is therefore not out of the question that not we ourselves, but those who may follow us, will discover some practical method of influencing the segmentation of the ovum in the direction of maleness, or femaleness, at will. It will consequently be well for us to keep in mind as clear a conception as we can of the biological hypotheses of to-day relating to the determination of sex and of heredity.

Sex Determination.

Modern biological research first placed the difficult subject upon a firm foundation in the case of insects and certain genera of birds, and there is little doubt that in principle these results are applicable to the higher animals.

Sex is determined at the moment of fertilisation—i.e., when the male and female gametes unite, and the arrangements are such as to produce an approximately equal number of individuals of either sex. When the gamete or sex cell divides its nucleus breaks up into a series of dense, deeply-staining bodies known as chromosomes; each species of creature has its own special number and arrangement of chromosomes which are constant for that species. After division of the gamete each daughter cell contains the same number and arrangement of chromosomes as the parent cell. Before the male and female cells fuse in the act of fertilisation, certain preparatory changes take place in the chromosomes. They become arranged in pairs, and as a result of cell-division the two members of each pair separate from one another so that each resulting nucleus contains only half the original number of chromosomes. This is called the *reduction-division* and it is accomplished in the human egg-cell by the extrusion of the polar bodies. In the chromosomes are carried the elements which determine sex and also those which determine hereditary characteristics. The reduction division is the mechanism by which variations in inherited characteristics are produced, the elements extruded at this moment representing the hereditary traits which will be absent in the new individual.

It is obvious that this mechanism gives possibilities of an almost endless variety of combinations of hereditary characteristics, and is comparable to the shuffling of a pack of cards. It offers an easy explanation of the differences both physical and temperamental which are so commonly observed in children of the same parents. Indeed, with the exception of "identical twins"—i.e., uniovular twins of the same sex and identical physical characteristics, these variations are almost universal. The close similarity of uniovular twins of the same sex strongly supports the view that this form of twin results from the fertilisation of a single egg-cell.

It is known that in certain insects the number of chromosomes differs in the two sexes, the female having one more than the male; a similar difference between the two sexes exists in the case of many other creatures. The sex-chromosomes are called X-chromosomes and in the simplest form the female has two similar chromosomes XX; in the male there are two dissimilar sex-chromosomes—viz., XY, the female always has XX. After the reduction-division has occurred the female gamete will, in consequence, always contain an X chromosome; in the case of the male gamete one-half will contain an X, another will contain a Y chromosome. If an X female fuses with an X male the result will be XX—i.e., female; or if X female fuses with Y male the result will be XY—i.e., male.

Certain experimental work which has been done in the case of insects and birds, however, appears to indicate that the proportion of individuals of either sex may be altered to some extent by external influences. Leiter found in experimenting with the eggs of certain moths that by exposing them to a temperature of 35–37° C. (about 90° F.) the proportion of male individuals was markedly increased, while conversely a similar exposure to a low temperature markedly decreased this proportion. In the case of pigeons experimental work has so far advanced that in the words of Julian Huxley,[4] "there exists a very strong probability that we shall be able to find some agency which will alter the sex-ratio to suit our wishes."

He would be a bold man who would affirm that these results are incapable of extension to the case of the higher animals such as the mammalia. At the present moment we are not justified in assuming that they can be so applied, for it is obvious that in animals which carry their young in the womb, the fœtal environment could be modified, if at all, only with the greatest difficulty in the direction of altering its temperature. Of course, rises of body temperature are not uncommon, but when fever occurs in pregnant women the ovum is subjected not merely to the raised temperature of the body but also to the toxic bodies which result from fever or those to which the fever is due. The experiment of subjecting the mammalian ovum during segmentation to an elevated temperature uncomplicated by other changes seems almost impossible of attainment.

The idea that it was possible by extraneous measures to determine the sex of the unborn child has been tenaciously held since the beginning of history. Gifts to pagan deities and pilgrimages to shrines of saints represent the appeal to the supernatural which human nature is prone to make on all critical occasions. These are, however, not, strictly speaking, therapeutic measures and do not concern us now. The belief still persists among the laity that matters can be so arranged by husband and wife as to produce a child of the desired sex, but this belief has no basis in accredited facts.

Malformations.

Let us in the next place consider the causation of malformations. We have seen that the embryonic period is the time at which those deflections from the normal course of development occur which result in the production of malformations of all kinds. There was no clear idea possible of the causation of these defects until it was shown by experiment that they could be produced by subjecting the developing embryo to various kinds of abnormal stimuli; from small beginnings an extensive field of experimental teratology has now been covered, and it appears that there is no known malformation which cannot be experimentally reproduced, in the case of certain classes of animals. It is, of course, admitted that the particular stimuli which have been made use of experimentally could not well be applied to the mammalian embryo. They are all sufficiently powerful to produce actual injury, and their effects may fairly be classed as traumatic. These experiments lead us to believe that the cause of malformations in man must be sought in some alteration of environment which would be comparable to the physical or mechanical stimuli used in these experiments.

It would serve no practical purpose to enter at all fully into it, but one or two examples may be cited of the results of injury of the segmenting ovum. The expression "injury" must be understood to include all abnormal stimuli, mechanical, thermal, chemical, and electrical.

Some of the earliest experiments were made with the incubation of hen's eggs, when it was found that variation in the temperature of the hatching medium in either direction resulted in the production of a large percentage of deformed chicks. By shaking the eggs, or standing them up on end St. Hilaire produced double-monster chicks. Other observers worked with chemical stimuli, and it was found that the injection of alcohol into the blastomere of the incubating egg produced a large percentage of deformed chicks. The more toxic forms of alcohol, such as isopropyl alcohol, might result in the appearance of over 80 per cent. of such deformities (Féré).[5]

More recently experiments have been made with the ova of sea-urchins and similar forms. It has been discovered that by violently shaking the fertilised ova in a centrifuge, the component cells become separated from one another, and each separate cell may then develop a complete individual of proportionately smaller size than the normal. These latter experiments support the view that triplet, quadruplet, or quintuplet pregnancy may possibly be accounted for, not by simultaneous fertilisation of more than one ovum, but by traumatic separation of the cells of the blastomere at a very early stage of its formation. With ascidian ova it has been shown that if, in the two-cell stage, one cell is destroyed by heat the other develops into a half-embryo. Similarly, if in the four-cell stage the two posterior cells are destroyed the remaining ones develop into an embryo minus a tail and other hinder parts. Another observer found that in the frog also a hemi-embryo could be produced in much the same manner as in the ascidian, but his results lack confirmation (Rowe). Further, if the frog's egg be turned upside down in the two-celled stage, double-bodied or double-headed embryos may result. Siamese twins and two-headed forms in man probably result from partial separation of the cleavage cells. In vertebrate animals spina bifida has been produced by changes in temperature, and in other cases cyclops has been produced.

We must not conclude that traumatism is the invariable cause of malformations, because F. W. Browne[6] has shown that there is good reason to believe that the anencephalic fœtus is the result of non-development of the pituitary body. And further, remarkable effects may be produced by alterations of nutrition. At any rate, it is clear from what has been said that deformities should not be regarded as mere freaks of the developmental forces, or as the result of hereditary vicious tendencies. The future may possibly teach us the nature of the terato-genetic traumata which operate in man and how to avoid them. At the moment we have no gleam of light on the subject.

Causes of Embryonic Death.

Of the actual causes of death in the embryonic period we know little, and there is no reliable basis on which an estimate can be formed of the frequency of embryonic death. It is probable that a considerable number of miscarriages occur which are not the result of disease, but are either produced by slight traumatic causes or are due to a certain unfitness of the early embryo to complete its development. In all creatures the reproductive process is attended by a certain amount of wastage.

It is not the rule of nature that all the ova which ripen and are discharged from the ovary should become fertilised, nor that all those which do become fertilised should complete their development into new individuals. The character and cause of this normal wastage have been carefully examined by Arthur Robinson[6a] in the case of horses and ferrets, the former being either Clydesdales or thoroughbreds, about which accurate details as to mating and foaling could be obtained. Robinson showed that in ferrets a considerable proportion of the zygotes or fertilised ova perished at various stages of development, although in the same uterine cornu neighbouring zygotes on either side of them developed normally. He regarded their death as being due to structural unfitness of the zygote to fulfil its destiny, and not to any abnormal maternal condition. In this conclusion he was no doubt right. The occurrence of fœtal death in the case of mares is not clearly proved by Robinson's data, and it would appear that his conclusions are mainly to be read as applicable to animals which produce their young in litters, and in whom, consequently, a high fœtal death-rate would not be prejudicial to the continuance of the species.

In animals which produce only one, or at the most two, young at birth, like mares, a high fœtal death-rate would be of graver significance. It may be admitted, however, that in man it is, at any rate, probable that a certain unknown proportion of the abortions which occur, and for which no pathological explanation can be found, may be set down to the reproductive wastage described by Robinson.

2. THE FŒTAL PERIOD.

Before proceeding to consider the conditions which are mainly accountable for loss of fœtal life, it will be well to review one or two matters which are concerned with what may be called the general hygiene of the fœtus in utero. Let us look at the case of the child of healthy parents, suffering from no disease which can be transmitted to it such as the infections, or which can prove inimical to its continued existence such as toxic albuminuria and eclampsia. Besides providing it with food and shelter, does a healthy mother influence the condition of the child in utero by her own physical health, or by her occupation, or by the struggle for existence?

Transmission of Immunity.

On the threshold of this question lies the subject of the transmission of immunity. Is the new-born child in any way prepared, by the transplacental passage of immunity bodies from the mother, to resist infection acquired after birth? Clinicians have frequently drawn attention to the great susceptibility of young infants to infections of all kinds, and the view has been often expressed that the child does not acquire a power of actively resisting infection until the second year has been passed. Passive immunity may, however, to some extent be acquired from the mother—i.e., antibodies present in the mother serve to confer a certain measure of protection upon the child while its own powers of resistance are undeveloped. It will, perhaps, be of interest to summarise as well as I am able the present state of our knowledge on this subject.

For a long time it was thought that such antibodies as the young infant possesses reach it through the mammary secretion, and that mainly through the special secretion of the first two to three days, known as the colostrum. This view was the outcome of experimental work done on ruminant animals such as the cow, the goat, sheep, and also on pigs and horses. In these animals antibodies do not reach the fœtus in utero at all, but they are present in large amount in the breast milk, and can be found in the blood of the young after suckling. Two American observers, Kuttner and Ratner,[7] have recently shown that these results do not hold good for all mammalia, and that in certain rodents antibodies can be detected in the umbilical blood at birth. Similarly, these observers have shown that antibodies can also be found at birth in the blood of the new-born human infant. This difference between ruminants and rodents is attributed by these investigators to a difference in placentation; in the former the placenta consists of a double layer of epithelium, while in rodents and in man the placental epithelium consists of only a single layer, and is therefore more readily permeable.

The experimental work has been done mostly with the antitoxin of diphtheria, because in the cutaneous reaction known as the Schick test we have a very convenient means of checking the individual power of resistance to the diphtheria toxin. I may remind you that the Schick test consists in the intradermal injection of a specific dose of a graduated solution of diphtheria toxin; if this dose is inadequately "resisted" by the tissues a local reaction occurs in 24–36 hours; if the resistance is adequate there is no local reaction. A positive result is therefore an indication that the individual is inadequately protected.

Kuttner and Ratner found in a series of 30 observations that whenever the mother gave a Schick negative test, the diphtheria antitoxin could be detected in the blood of the umbilical cord as well as in that of the mother. In a further series of 15 cases in which quantitative tests were applied, they found that the amount of antitoxin in the umbilical blood was identical with that in the mother's blood. This observation has been amply confirmed by other investigators. There is, therefore, in these animals (rodents) no loss of antitoxin in passage through the placenta, which clearly allows these bodies to pass through freely. These immunity bodies transmitted from the mother's blood during pregnancy would confer immunity on the child, in the same degree as it exists in the mother.

The observation was first made in 1895, and has since been established beyond question by numerous observers, that the new-born child is protected against diphtheria. According to Zinsser,[8] 93 per cent. of new-born infants give a negative Schick reaction provided that the mothers are negative also. This protection diminishes during the first year, so that at the beginning of the second year two out of every three infants have no antitoxin in their serum. The immunity of the new-born infant is brought about by the transplacental distribution of the antitoxin present in the mother's blood, and, as we have just seen, the amount of antitoxin is the same in both the mother's and the child's blood.

These American authors further made a comparison between the protective value of the umbilical blood and that of the colostrum in guinea-pigs. In 9 cases out of 12 the cord-blood gave complete protection against a lethal dose of diphtheria toxin, while colostrum gave complete protection in only 1 out of 12; further, they found that the antigen content of the blood of the young was not raised after suckling had begun. It is, therefore, clear that in these creatures immunity bodies pass to the fœtus mainly through the placenta, and only to an inconsiderable extent is this amount supplemented from the mammary secretions. In the case of calves, on the other hand, it appears that the colostrum is the chief vehicle by which immunity bodies pass to the young; this fact is confirmed by a striking clinical observation that while calves deprived of suckling regularly fall a prey to the disease known as "scours," a form of *Bacillus coli* infection characterised by diarrhœa, those which are suckled are completely protected from the disease. Owing to the fact that the rodents and man have a similar form of placentation—i.e., a single-layered epithelial filter, it is probable that results obtained with these animals are more likely to throw light upon what occurs in man than are experiments with ruminant animals.

One further observation I should like to mention in relation to immunity. Kleinoff[9] claims to have shown that the umbilical blood of the new-born child possesses definite hæmolytic or bacteriolytic powers. He found that if the serum of the infant's blood were added to cultures of certain bacteria the growth of these organisms was inhibited, and in some cases the bacteria were broken up. The effect is the same, although less in degree than that obtained with the blood-serum of an adult. It is clear, therefore, that the fœtus acquires certain passive immunities in utero through the placental interchanges. What may be the actual extent of this process of passive immunisation of the child we cannot tell in the meantime. A very wide field is opened up by these suggestive experiments, and although at present the number of infections in respect of which it is possible to confer passive immunity is not large, it must be remembered that the science of immunology is in its infancy, and great developments may be witnessed in the future.

Effect of General Maternal Conditions.

Next we must consider to what extent the well-being of the fœtus in utero can be influenced by general maternal conditions such as nutrition, occupation, hardship, and what we may perhaps term "nervous stress." The tendency within the profession has been to consider that the child in utero, like all parasitic organisms, would succeed in looking after itself no matter how much the mother might suffer from such conditions as hardship or under-feeding. It is doubtful if this view can be maintained absolutely, and there are certain facts and considerations bearing upon the point to which I should like to draw your attention. It will be convenient if in the first place we consider conditions which may conceivably be detrimental to the fœtus in utero without actually terminating in miscarriage or stillbirth.

If an inquiry is made as to what extent the occupation and environment of the expectant mother may affect the well-being of the child at birth, a serious difficulty is at once encountered—viz., that it is very difficult to find any reliable criteria of well-being in the new-born except that of weight and length. It does not necessarily follow that the heaviest infants are the most vigorous at birth, or that they make better progress than the others. There are, undoubtedly, exceptions, but, as a rule, babies under the average weight at birth are less vigorous than those of normal or more than normal weight. It does not necessarily follow that every few grammes added to the weight of the child add in corresponding degree to its vigour and to its chances of survival. It is, however, an arguable proposition that such is the case, and certain investigations have been made upon this assumption which are worthy of our consideration.

Effect of Maternal Occupation on the Child.

Adolphe Pinard [1] was for many years an advocate of the view that women engaged in industry who continued at their work during the last three months of pregnancy showed a marked tendency to premature confinement; their infants were accordingly under-sized and less vigorous than full-time children. He carried out an inquiry as to the weight of the child at birth in different classes of women, with a view to testing the effects on the child of the mother's occupation, and particularly as to the value of cessation of work and admission to the clinique well in advance of the confinement. Investigations on similar lines were made about the same time by Letourner.

The results of Pinard's examination of 4445 cases were as follows:—

	Average weight at birth.
1. Women industrially occupied up to time of confinement and working in standing position	2787 g.
2. Women industrially occupied working in sitting position	3138 g.
3. Women who ceased their work from one to three months before confinement	3362 g.

This difference between the women who were engaged in hard industrial work up to confinement, and those who had ceased work for at least a month, is represented by an average increase in the weight of the infants of the latter of 575 g. The increase in the children of the women who rested is attributed by Pinard solely to the fact that these women carried their infants to term, while an undue proportion of the others did not.

Letourner's results were very similar. He divided the subjects of his inquiry into three classes as follows:—

	Average weight.
1. Women who worked up to confinement	3010 g.
2. Women who ceased work for at least ten days ..	3290 g.
3. Women who were admitted to the clinique before labour	3366 g.

An independent inquiry was being carried on about the same time in Germany and the results were reported by Fuchs in 1899.[10] His work was done on somewhat different lines and is perhaps more convincing than that of Pinard. He rightly thought that in investigating the effects of maternal occupation on the weight of the child the comparison should be made strictly between infants of an equal degree of development, and he accordingly excluded all premature infants from his inquiry. Incidentally, it may be said that he disagreed with Pinard's conclusion that continuance in industrial work tended to result in premature labour.

Fuchs classified his cases into occupational groups:—

	Average weight at term.
1. Domestic service and allied occupations—	
(*a*) No hospital treatment	3285·33 g.
(*b*) Hospital treatment	3437·16 g. (+ 152)
2. Dairy and other agricultural work—	
(*a*) No hospital treatment	3324·95 g.
(*b*) Hospital treatment	3354·50 g. (+ 30)
3. Factory workers—	
(*a*) No hospital treatment	2948·35 g.
(*b*) Hospital treatment	3123·75 g. (+ 175)
4. Light work only—	
(*a*) No hospital treatment	3196·42 g.
(*b*) Hospital treatment	3305·76 g. (+ 109)
5. Married women, housekeepers, &c.—	
(*a*) No hospital treatment	3378·45 g.
(*b*) Hospital treatment	3416·15 g. (+ 136)

The main conclusions which appear from Fuchs's observations are (1) that the infants of factory workers are smaller than those of the other classes, (2) that the infants of all classes of patients benefit by a hospital régime during the latter weeks of pregnancy, (3) that especially women who work in factories, and to a less extent town workers generally, benefit more from the hospital régime than do women engaged in outdoor agricultural occupations. These conclusions serve to emphasise the generally accredited view that country women engaged in farm work, who are necessarily of good physique, who are engaged in outdoor occupation, and are well-fed, are the most likely to produce vigorous and well-developed infants. The problem of the weakly infants whose chances of survival are below the average is essentially an urban problem.

Effect of Maternal Privation and Hardship.

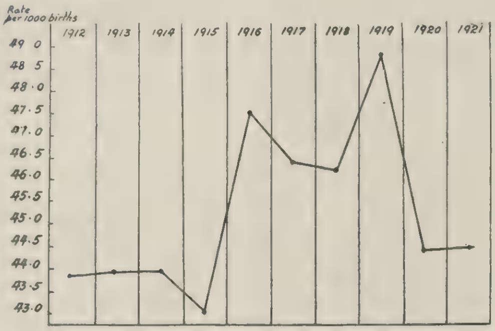
Closely linked to the question of fatiguing occupation is the question to what extent privation and hardship endured by the mother during pregnancy can influence the well-being of the child in utero. The experience of the Central European countries during and immediately after the war has shown us the result of an experiment on a scale far exceeding that which would be possible under any ordinary circumstances. The reports from Germany and Austria were almost unanimous that no appreciable diminution could be detected in the average weight or length of infants born during these years of privation. One authority, Prof. Klotz,[11] of Lübeck, has, however, noted a point which is worthy of consideration. In the years 1919 and 1920, which were perhaps even more difficult for the lower classes in Germany than the actual war period, Klotz found that if a comparison were made between the legitimate and illegitimate infants it was found that while the former showed no difference in weight between pre-war years and these two post-war years, it was not so with the illegitimate infants, and he gives the following figures:—

Average Birth Weights Before and After the War (Klotz.)

	Legitimate.		Illegitimate.
1913	3742 g.	....	3671 g.
1914	3819 g.	....	3821 g.
1919	3789 g.	....	3424 g.
1920	3810 g.	....	3559 g.

It is to be borne in mind that for a long time before the war the proportion of illegitimate births in Germany was unusually high—viz., between 9 and 10 per cent. of the total births. This already high proportion increased during the war period because the number of legitimate births became reduced at a much greater rate than the illegitimate ones. The stress of hardship and want will naturally fall more heavily on the illegitimate mothers than on others, and it is not unreasonable to suppose from these data that there is a limit beyond which such conditions as privation and hardship would become definitely detrimental to the child in utero (see chart).

While we are speaking of the effects of war conditions, I should like to call attention to a further point—viz., their influence upon the occurrence of stillbirths. The accompanying chart shows the changes which occurred in the stillbirth-rate in France during the period covered by the war and the two following years. The figures are worked out in their ratio to the total births, and it will be seen that a marked rise in the stillbirth-rate occurred during the years 1916–19.



The figure for 1914 is a provisional one.

The corresponding figures for our own country are not available. War conditions included so many different varieties of privation and nervous stress that it is impossible to attempt any explanation of their modus operandi. We must simply record the fact that there is a point beyond which such conditions are unfavourable to the proper development of the fœtus in utero.

There is one more study of the effects of maternal nutrition on the new-born child to which I should like to refer—viz., that published by Darwall Smith[12] in 1916. He closely examined the records of over 6000 hospital cases in London and Dublin with regard to the ratio of height to weight, the nutritional history, and the observed nutritional condition of the mother on admission and on discharge from the hospital. He divided his cases into three groups—those in which the nutritional condition of the mother were (*a*) bad, (*b*) average, and (*c*) good—and his conclusions as regards the influence of these conditions (1) on fœtal mortality, (2) on prematurity, (3) on the birth weight are of great interest.

	Condition.		
	Good.	Average.	Bad.
Fœtal mortality	1·9 %	1·1 %	7·7 %
Prematurity	1·3 %	2·7 %	11·9 %

As regards the birth weight, Darwall Smith found that there was little difference between the classes of bad and average nutrition, but the infants in the class of good—i.e., over-average—conditions were decidedly above the average weight.

These observations suggest that a bad nutritional condition of the mother greatly increases the percentage of stillbirths and of premature labours, and slightly decreases the birth weight. The mothers who were over-nourished showed a considerable average increase in birth weight, and a higher percentage of them were able to suckle their babies.

Effect of Maternal Diet.

A question related to that which we have just considered, but in reality distinct from it, is whether specific deficiencies in the mother's diet can influence the development of the fœtus. It is obvious that this may be so, although general insufficiency of food may be without effect. In its clinical aspect this question has hardly been explored at all, so far as I am able to find, but there is a certain amount of experimental work which I think deserves notice. In 1921 Reynolds, of Boston, well known in the United States for his interest in the subject of sterility, published in conjunction with Macomber a series of observations on the manner in which the fertility of rats could be influenced by feeding them on specifically deficient diets.[13] In his experiments he took a certain strain of albino rats which had been inbred for 34 generations, and whose fertility-rate was well determined. The rate was somewhat lower than that of rats of a heterogenetic strain.

For the purpose of his experiments the rats were fed upon four different kinds of deficiency diet; the deficient elements were not absent from the diet, but were present in quantity somewhat less than the standard quantities of the stock diet, with which they were compared. The four varieties were:—

1. Low in fat-soluble vitamin.
2. Low in protein.
3. Low in calcium.
4. Double deficiency — i.e., low in protein and fat-soluble vitamins, high in carbohydrates.

The test consisted of determining the number of matings which proved fertile, and resulted in litters, under each form of diet, and the results were as follows:—

	Per cent.		Per cent.
On stock diet	65	On diet No. 2	31
On diet No. 1	55	On diet No. 3	14

In addition to diminishing the number of fertile matings it was found that the progeny of these animals did not begin to breed until a more advanced age than the stock rats, and the total period of their sexual activity was reduced. By continuing the deficiency diet through several generations complete infertility could be produced. These infertile rats were apparently well-developed animals with the exception of those bred under a double-deficiency diet which were feeble and undersized.

The authors made a further very interesting observation—viz., that abortion with a macerated fœtus occurred in eight instances out of a comparatively small number of rats on a double-deficiency diet. After an extensive search through the literature of rat-breeding they had failed to discover an instance of this occurrence under other conditions. The authors further state that Steinbock has also reported the birth of macerated fœtuses in cattle and swine fed on similar deficiency diets.

It cannot be questioned that these observations of Reynolds and Macomber are very suggestive. It is difficult to make tests of sufficient numbers of cases in clinical work, but occasional opportunities may arise of seeking the explanation of failure to conceive, or after conception, of failure to carry the child to term, in deficiency of some important dietetic element. We have all seen those rare but puzzling cases in which a woman has on several occasions carried her child almost to term, and then for some quite obscure reason the fœtus has died in utero before labour has set in. Such cases, of course, are generally syphilitic, but failing this explanation, it would be worth while to explore the possibility of a dietetic deficiency being the operative cause. Occasional instances of what used to be called "habitual abortion" may also possibly arise from some dietetic fault.

The calcium content of the diet of an expectant mother is especially deserving of consideration. Blair Bell has estimated that the mother parts with 800 g. of calcium during the nine months of pregnancy; unless the element is freely renewed in the diet, it is quite possible that the fœtus may be calcium-starved with disastrous effects to its vitality. Milk and green vegetables are the principal dietetic sources of calcium, and this element can, of course, be readily supplemented medicinally.

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Clinical Lecture
ON
TRIPLE PUNCTURE:
LUMBAR, CISTERNAL, AND VENTRICULAR.

Delivered at Westminster Hospital

BY SIR JAMES PURVES-STEWART, K.C.M.G., C.B., M.D. EDIN., F.R.C.P. LOND.,
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WITHDRAWAL of the cerebro-spinal fluid is a familiar clinical procedure which has now been practised regularly for over 20 years. It is recognised as being of the highest value, sometimes for purposes of diagnosis, in other cases for treatment. A large and increasing literature has grown up with regard to this fluid, its pressure, its cellular content, its chemical composition, and its various pathological reactions, such as the Wassermann reaction, the colloidal gold and colloidal benzoin tests, and so on. These reactions I do not propose to discuss, but shall confine myself to a consideration of the various ways in which the cerebro-spinal fluid can be withdrawn for purposes of examination.

ANATOMY.

Let us first recall a few anatomical points. It is now well recognised that the cerebro-spinal fluid circulates slowly through an endothelial-lined system of its own. It is secreted by the capillaries of the choroid plexuses into the cerebral ventricles, much in the same way as the watery constituent of the urine is secreted by the renal capillaries into the glomeruli of the kidney. Starting at the lateral ventricles, the cerebro-spinal fluid flows slowly downwards along the Y-shaped foramen of Monro into the third ventricle. Here it receives accretions of fluid from the small plexuses within this ventricle; it also receives, through the infundibulum, the secretion of the posterior lobe of the pituitary gland. Then, passing along the aqueduct of Sylvius, or iter, the fluid reaches the fourth ventricle, again receiving accretions from the choroid plexuses of the fourth ventricle. From the fourth ventricle it passes back into the *cisterna magna* or *spino-cerebellaris* through three openings in the pia-arachnoid. One of these openings, the foramen of Magendie, is situated mesially in the roof of the fourth ventricle; the others are the bilateral foramina of Luschka, situated in each lateral recess of the ventricle. The direction of the stream now changes. It turns forwards, coursing from the cisterna magna along the ventral aspect of the medulla, pons, and mid-brain, to the wide and deep *cisterna basilaris, pontis*, or *interpeduncularis*, a quadrilateral space extending laterally from one temporal lobe to the other and postero-anteriorly from the upper border of the pons to the optic chiasma. At the chiasma the stream turns upwards again to enter another cistern, the *cisterna terminalis*, a triangular space whose base is at the optic chiasma whilst its apex is directed upwards beneath the anterior end of the corpus callosum, surrounding the anterior cerebral arteries. The basilar cistern comprises three parallel longitudinal channels, one in the middle line, surrounding the basilar artery, and one on each side, enclosing the internal carotid artery. From each side again a lateral continuation passes outwards and upwards, constituting the *cisterna fossæ Sylvii*, leading along the course of the middle cerebral artery. Finally, there is a *cisterna venæ magnæ*, situated between the hinder end of the corpus callosum and the upper surface of the middle lobe of the cerebellum, containing the posterior cerebral arteries and the vein of Galen.

Passing from the cisterns along these various peri-arterial arachnoidal channels into the cerebral fissures, the cerebro-spinal fluid is ultimately distributed to the meshes of the subarachnoid space in the sulci of the cerebral cortex and to the arachnoidal villi and Pacchionan bodies. In these situations it is reabsorbed into the blood circulation through the venous sinuses in the dura mater. There are also certain funnel-shaped prolongations of the subarachnoid space which surround the cranial and spinal nerves as far as their foramina of exit through the dura mater. These are specially evident around the optic and trigeminal nerves. Thus the Gasserian ganglion of the trigeminal nerve lies in a special little arachnoidal pond, a diverticulum of the cisterna pontis, known as the *cavum Meckelii*. The subarachnoid cerebro-spinal fluid also communicates through the internal auditory meatus with the perilymph of the internal ear. From the cisterna magna there is also a slow downward current around the spinal cord, leading to the lowest end of the spinal subarachnoid space. Some of the spinal fluid escapes en route into the interpial lymph spaces and thence outwards along the peri-radicular lymph spaces. There is also a contrary upward current within the spinal cord itself, leading upwards to the fourth ventricle.

PHYSIOLOGY.

Let me also recall one or two physiological points. By experiments it has been shown that most of the cerebro-spinal fluid is reabsorbed through the cerebral arachnoid spaces, and only a small proportion through the spinal subarachnoid space. It is doubtful whether any absorption takes place from the cisternæ, whose main function is that of large conduits leading the fluid from the ventricles towards the surface of the brain.

The posterior lobe of the pituitary gland pours its secretion into the cerebro-spinal fluid of the third ventricle through the hollow infundibulum. The cerebro-spinal fluid also receives various products of metabolism from the nerve centres through the perineuronal and perivascular lymph spaces of the brain and spinal cord, which communicate directly with the general subarachnoid space.

Some poisons, such as salvarsan, which easily gain entrance into the blood stream, are held up and prevented from reaching the central nervous system by the activity of the choroid plexuses, which act as a protective hæmato-encephalic barrier. On the other hand, various other drugs are not held up, but pass through the choroidal filter and can be detected in the cerebro-spinal fluid. Thus, for example, urotropin taken by the mouth can be shown to yield formic aldehyde in the cerebro-spinal fluid, whilst in acute alcoholic poisoning, as we have repeatedly observed for ourselves in hospital, alcohol can be demonstrated in the fluid within two or three hours after it has been drunk.

POSSIBLE SITES FOR WITHDRAWAL OF CEREBRO-SPINAL FLUID.

From what we have already seen, it is evident that there are various ponds or collections of cerebro-spinal fluid, more or less accessible to the clinician, from which we can obtain samples of the fluid for purposes of examination. Let me mention one or two of the less common sites first.

Fractures of the base of the skull may permit of escape of cerebro-spinal fluid from the cranium. Sometimes this occurs through a broken cribriform

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(*Address to be concluded next week.*)

plate of the ethmoid, so that the fluid leaks down into the nose; sometimes it results from fracture of the temporal bone, causing escape of fluid through the ear.

Some years ago Beriel, of Lyon, devised a method of passing a needle along the orbit into the *cisterna basilaris*. The needle was passed along the orbit, close to its outer wall, and pushed through the dense fibrous tissue which fills up the sphenoidal fissure. Clinicians, however, found this method inconvenient, not only on account of its painfulness, but also because of the liability to wound the cavernous sinus.

Another rare and accidental path of obtaining the fluid is from the cavum Meckelii, through the foramen ovale at the base of the skull. This happened to me one day when I was injecting the Gasserian ganglion with alcohol in a patient with trigeminal neuralgia. The needle had been introduced longitudinally along the foramen ovale in the usual way, from before backwards. Before injecting the alcohol, I happened to notice that clear fluid was dropping from the facial end of the needle. This was collected in a test-tube and was found to give the ordinary reactions of cerebro-spinal fluid, including its reaction for glucose. It was thus evident that the point of the needle was in the cavum Meckelii. This route, however, is too uncertain to be reached except by a happy accident and is not recommended as a mode of approach.

We now come to what we may term the normal modes of obtaining the cerebro-spinal fluid.

(1) Lumbar Puncture.

This is the commonest, simplest, and most useful method for routine withdrawal of the fluid. The spinal theca is entered through one or other of the interlaminal spaces, somewhere between the level of the second lumbar vertebra where the spinal cord ends, and the second sacral vertebra where the fluid-containing cavity of the spinal arachnoid comes to an end. The two widest interlaminal spaces are the third and fourth lumbar spaces. We usually select the fourth space, which, as a rule, is slightly the larger. To identify this space we draw a horizontal line at the level of the summits of the iliac crests; this line intersects the tip of the fourth lumbar spine. The patient is most conveniently placed on a rather low seat, stooping forwards, with his head between his knees and his knuckles touching the ground. In this posture the interlaminal spaces are separated to their maximal extent. Or, if the patient is in bed and unable to assume the foregoing posture, we make him lie horizontally on his left side with his hips fully flexed, so that the knees touch the chin. In an unconscious patient, and even in one who is delirious or violent, this may be accomplished by passing one loop of a roller-towel over the neck, then passing the far end of the roll (both layers) beneath the patient's flexed knees, and pulling them up towards his face. Or a strong stout portmanteau-strap may be used for the same purpose if we happen to be single-handed.

By means of iodine we carefully sterilise the skin in the region of our puncture, usually including an area which covers two or three consecutive interspaces. Then, having frozen the skin with an ethyl chloride spray, we make our puncture, using a fine platinum or nickel needle, which can be boiled without rusting. In a child we may enter straight in the middle line, but in the adult, in order to avoid the dense interspinous ligament, it is convenient to select a point about half an inch to the right of the middle line (if the operator is a right-handed person). We now push our needle horizontally forwards, converging towards the middle line. If we have selected our level accurately no bone is touched and the needle passes directly through the spinal muscles until it reaches the ligamentum subflavum between the laminæ. Through this ligament the needle passes easily with a characteristic sense of resistance and at once perforates the spinal theca which lies in immediate contact with the ligament. In a successful puncture, after the sense of resistance, we suddenly feel that the point of our needle is no longer opposed but in an open cavity. On withdrawing the stilette which fills the needle, the clear cerebro-spinal fluid at once begins to well out, drop by drop.

During this process one or two minor impediments may occur, for which we must be prepared. First, if our level is not quite accurate, or if the patient has osteophytes projecting from his spinous processes or laminæ, the point of the needle may strike a bone. It is no use trying to push forcibly through this; we would only bend or break our needle. The proper thing is to withdraw the needle slightly, change its direction of puncture to a level either slightly above or slightly below, and try again. Secondly, it may happen that although our needle has safely penetrated the ligamentum subflavum, no fluid comes out. This may be due to blockage of the needle by a tiny blood clot, or by a small plug of muscle or fibrous tissue; if so, these are easily cleared away by passing a stilette along the needle. Or again, the blockage may be due to one of the cauda equina roots having floated against the mouth of the needle; if so, by slightly rotating the needle the nerve-root will no longer obstruct it. Or it may happen that the needle has successfully pierced the ligamentum subflavum but has pushed the whole spinal theca in front of it, like the empty finger of a glove, without perforating into the arachnoid cavity. In this case, even although the needle is unobstructed, as shown by the stilette, no fluid comes. If this happens we must just withdraw our needle and start again at the space above or below.

We sometimes read of "dry punctures." This usually means, not that there is no fluid within the theca, but that the operator has failed to penetrate within its cavity. True absence of fluid is a very rare occurrence; it may occur, however, in cases where the theca in the region of the cauda equina is filled with blood clot or with tumour tissue.

It is hardly ever advisable to employ suction to induce the fluid to flow. Normally it exudes, drop by drop, at a moderate pressure of about 20 cm. of water in the horizontal posture. If the pressure is abnormally low, and there is no obstruction within the vertebral canal above, the intrathecal pressure can be temporarily raised at once by Quickenstedt's manœuvre. This consists in compressing the jugular veins in the neck, either by the fingers or by using the hollow air bandage of an ordinary sphygmomanometer.

Having secured the requisite quantity of cerebro-spinal fluid for examination (usually 5 or 6 c.cm. are enough) we withdraw our needle as gently as we had pushed it in, seal the skin puncture with a little collodion, and instruct the patient to lie down for eight or ten hours afterwards.

(2) Cistern or Suboccipital Puncture.

This method of approach is through the occipito-atlantal ligament, which stretches from the posterior rim of the foramen magnum to the corresponding part of the laminæ of the atlas vertebra. In this way we withdraw fluid directly from the cisterna magna. As can readily be understood, owing to the close proximity of the fourth ventricle which lies in the floor of the cistern, we do not adopt this route rashly or as a routine method of obtaining cerebro-spinal fluid. Like the honourable estate of matrimony, it is "not to be enterprized unadvisedly, lightly or wantonly, but discreetly, advisedly and soberly . . . ."

There are, however, some conditions in which cistern puncture is almost essential for completing a diagnosis; for example, in compressive lesions of the spinal cord, where we desire to compare the composition and pressure of the fluids above and below the level of compression; or again, for therapeutic purposes, when we wish to introduce curative sera into the cerebral arachnoid space, as in certain varieties of meningitis.

If you feel the back of your own neck, the highest vertebral spine to be made out is that of the axis or second cervical vertebra; the first or atlas vertebra has no spinous process. Immediately above the spine of the axis vertebra you will feel a depression. This is the spot where our needle enters in order to reach the occipito-atlantal ligament beneath which lies the cistern magna. The patient's head should be flexed towards the sternum so as to open out the occipito-atlantal space as much as possible. We find that the most convenient posture is the left lateral, except in cases where we desire to inject a heavy oil, such as lipiodol, into the cistern; in these cases we select the sitting posture. The needle enters in the middle line. It is pushed forwards and slightly upwards, penetrating the thick resistant ligamentum nuchæ. The correct plane of puncture is one which traverses the depression above the second cervical spine, the upper edge of the external auditory meatus, and the prominence of the glabellum. Seen in profile, these three points should be in the same straight line. (Fig. 1.) As we, of course, are standing behind the patient, we cannot see the glabellum, but we can easily identify the external auditory meatus by getting an assistant to place a pencil horizontally into the patient's ear. We then aim our needle at the level of the upper border of the meatus, keeping carefully to the middle line. The occipito-atlantal ligament is reached at an average depth in the adult of 4 to 5 cm. It is rarely more than 6 cm., although I can remember several athletic men with large cervical muscles in whom the distance was as much as 7 or even 8 cm. Our cistern puncture needle should be somewhat stouter than the lumbar puncture needle, so as to overcome the resistance of the ligamentum nuchæ without bending, and it should be fitted with a bevelled stilette. It should also be marked off in centimetres, so that we may know the exact depth to which it has penetrated.

Fig. 1.

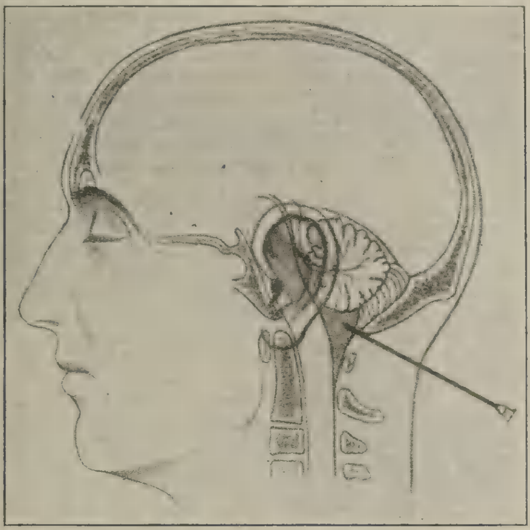

Diagram of cistern puncture.

In a successful cistern puncture, when we penetrate the occipito-atlantal ligament and enter the cistern, we feel a characteristic sensation of entering an open space, exactly similar to the feeling in a successful lumbar puncture. If the needle is wrongly directed it may strike too low, hitting the arch of the atlas, or too high, impinging on the occipital bone just behind the foramen magnum. This fault may be corrected by withdrawing the needle a short distance and trying again, carefully verifying the plane of puncture by means of the external auditory meatus and glabellum. On penetrating the occipito-atlantal ligament and entering the cisterna magna, cerebro-spinal fluid is at once obtained. If no fluid comes and we are certain that our needle is within the cistern, it may be that the middle lobe of the cerebellum is resting against the needle. But this is only likely to occur in two conditions: first, if our needle has been directed too acutely upwards; or secondly, in cases of increased intracranial pressure in which the cerebellum has prolapsed downwards towards the foramen magnum, forming part of a "pressure-cone." Such cases of intracranial pressure, however, can generally be recognised beforehand, and in them cistern puncture will be scrupulously avoided. In a successful cistern puncture we are careful to stop pushing in our needle the moment its point is within the cistern. The depth of the cistern varies from 1½ to 2 cm., which is our margin of safety, for it will be readily understood that if we are incautious and go too far, so as to reach the floor of the fourth ventricle, we might do grave and irreparable damage. In the hands of a skilful and careful operator, however, cistern puncture, although it sounds a hazardous procedure to those who have never witnessed it, is really easy and safe. In these wards you have all repeatedly seen it performed without difficulty and without discomfort to the patient.

(3) Ventricular Puncture.

This procedure, like cistern puncture, should be carried out with equal caution and reserved for exceptional cases. Sometimes it is of the utmost value, both for purposes of diagnosis and treatment. Thus, for example, in inflammatory affections, acute or chronic, of the nervous system, as in meningococcal, tuberculous, or syphilitic meningitis, it is important to compare the ventricular fluid with the subarachnoid fluid, whether derived from the cistern or from the lumbar pond. Again, in brain tumours, by withdrawing fluid from the lateral ventricle, replacing the fluid by air, and then taking radiograms of the air-filled ventricles, we can gain useful information not only as to the presence of internal hydrocephalus, but also as to the exact amount of distortion or displacement of the various cerebral ventricles. Further, in some inoperable tumours at the base of the brain, the headache and vomiting (symptoms which are due to internal hydrocephalus) can be promptly alleviated by ventricular puncture, which is a much less formidable affair than decompressive craniotomy. Some of you remember a patient in the ward a few weeks ago with a tumour of the pons in whom the agonising headache was at once relieved in this way.

In infants ventricular puncture can be carried out through the anterior fontanelle. In older patients, however, we have to penetrate the skull before reaching the dura mater. For this purpose Goetze has devised a steel drill which has a groove running along one side almost to its point. By means of this we quickly drill through the frozen scalp and skull until the point of the drill is through the inner table. We then pass a fine stilette along the groove into the brain. The drill is now withdrawn. A hollow blunt needle is next threaded on the stilette. Once this hollow needle is within the brain substance another blunt stilette, exactly filling it up, is inserted along the needle and the whole affair is cautiously pushed in, millimetre by millimetre, withdrawing our stilette from time to time to see when the ventricular cavity is reached, as shown by the welling out of clear cerebro-spinal fluid. The diameter of the ventricle in the line of puncture can be measured by first noting the depth at which fluid begins to flow, and then, on continuing to thrust in the needle to its far wall, noting the depth at which the flow ceases.

How do we approach the lateral ventricles in the adult skull? This can be done either from the vertex, from the side, or from the back of the head. The main cavity of the lateral ventricle is most conveniently approached from one or other side of the vertex, choosing a point 4 or 5 cm. in front of the upper end of the rolandic fissure. We may either do a vertico-internal puncture, entering our needle about 1 cm. from the middle line and directing it downwards and slightly outwards, or we may do a vertico-external puncture, which I find is rather more convenient, in which we select a point 4 or 5 cm. from the middle line and direct our needle downwards and inwards. (Fig. 2.)

To puncture the descending horn within the temporal lobe we take a line vertically upwards through the external auditory meatus or a little behind, and enter at a point a few millimetres above the upper edge of the pinna. In this case the needle is so directed that, when looked at from the front, it points towards the outer canthus of the corresponding eye.

The depth of a vertical puncture is somewhat greater than that of a temporal one; in the one case it is a few millimetres more, in the other a few millimetres less than the number of centimetres that go to the circumference of the head. Thus, in a skull that measures 65 cm., we expect to reach the normal ventricle at a depth of about 6·5 cm.

FIG. 2.

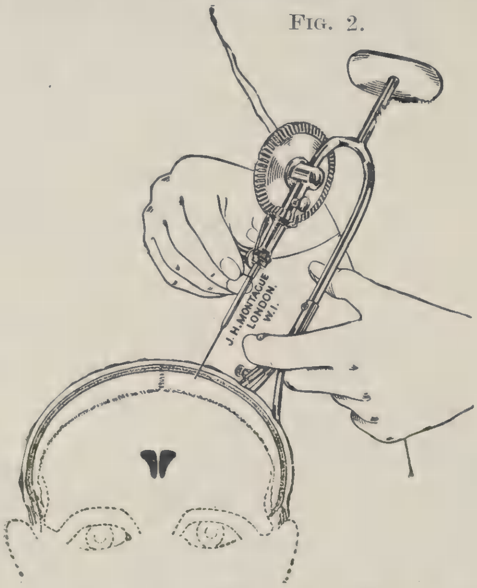

Diagram of ventricular puncture.

The posterior or occipital horn of the lateral ventricle is approached from behind. We select a point about ¾ in. above the superior curved line of the occipital bone and 1 in. from the middle line, and direct our needle horizontally forwards and slightly outwards.

Lewkowicz, of Krakow, who has done such valuable work on cerebro-spinal meningitis by studies on the ventricular and lumbar fluids, mounts his Goetze drill on a small electric motor such as is used ordinarily by dental surgeons. This, however, is difficult to carry about. Accordingly, I have devised a mechanical breast-drill with a multiplying action which has been made for me by Messrs. Montague, of 69, New Bond-street, W. This particular drill, as shown in Fig. 2, has an adjustable tripod base, whereby it can rest steadily on the convex surface of the head. It also has a movable sleeve on its shaft. This allows the drill-point rapidly to perforate the scalp and cranium and to stop short the moment we are through the bone. The stilette, followed by the hollow needle, blocked in its turn by the blunt stilette, are now passed through the drill-hole and pushed gently inwards until the ventricle is reached.

Contrary to what you might perhaps expect, ventricular puncture is almost painless, so that local freezing of the scalp is all that is required as an anæsthetic, even in the case of children.

The puncture mark on the scalp and cranium is only about the diameter of a large pinhole. As a matter of fact, within a few days after such a puncture it is impossible to detect any mark whatever, whether by the eye or on palpation of the patient's head. If we wish to do a subsequent puncture it is necessary to make a fresh drill-hole.

DIABETES AND OPERATION.

A NOTE ON THE EFFECT OF GASTRO-JEJUNOSTOMY UPON A CASE OF MILD DIABETES MELLITUS WITH A LOW RENAL THRESHOLD.

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As a rule the publication of a single case, however rare, needs justification; in this instance it is not the case but the observations made upon it that make publication advisable.

Duodenal ulcer is not uncommon in diabetes mellitus—one condition does not protect from the other—but it is rare to meet it in a patient suffering from so mild a degree of diabetes as to make operation advisable. A general anæsthetic usually makes the diabetic condition much more grave. The change need not necessarily be sudden or dramatic, and therefore often fails to be recognised. Duodenal ulcer in a man with mild diabetes and a low renal threshold must be very rare, and so I publish the single case.

Diabetes mellitus is diagnosed, as a rule, by the glycosuria accompanying it. Diabetes mellitus is an unfortunate term, it is like "exophthalmic goitre," the name of the disease denotes the two most obvious signs. To say that one has met diabetes mellitus without the patient suffering from glycosuria sounds a contradiction in terms, but is no greater a contradiction than "exophthalmic goitre" without exophthalmos or goitre.

When one starts thinking about diabetes mellitus with a gradual onset one must realise there is a stage at which the patient's powers of burning and storing sugar have fallen from the normal 100 per cent. to 95 per cent., and that the deterioration may be very slow. In my opinion this gradual deterioration often is suddenly accelerated by some injury to pancreatic cells or by infection, and then the diagnosis of diabetes mellitus is made. The difficulty remains, however, that a man with only a 75 per cent. efficient carbohydrate metabolism will be able to eat and drink ordinary food without glycosuria occurring, provided his renal threshold for sugar is normal. In other words, he would be suffering from diabetes mellitus without glycosuria (hypoglycopyresis).

This avenue of investigation has not been explored very fully, and yet it may lead towards the origin of diabetes mellitus in middle life. The case I am recording had a very mild diabetes, his glycopyretic function was of 75 per cent. efficiency, and it seems unlikely that diabetes would have been diagnosed if he had not possessed a remarkably low renal threshold for sugar. At one time his urine contained quite a recognisable quantity of dextrose, whilst his blood-sugar was below 0·12 per cent. (many individuals do not have glycosuria until their blood-sugar reaches 0·21 per cent.).

Clinical Record.

T. M., aged 37. Admitted to hospital May 26th, 1924. He gave a history of being quite well until three years ago, when he began to have attacks of abdominal pain lasting for two or three hours, usually two or more hours after food. Occasionally he had free intervals of three to six weeks. Taking food relieved the pain. His appetite was good. The pain started in the epigastrium and ran round to the back, sometimes kept him awake at night, at other times awakened him in the early morning. Six months ago sugar was found in the urine. The patient, upon interrogation, admitted very slight thirst occasionally and cramp in the legs, but neither of these seemed to be sufficiently intense to suggest diabetes mellitus. The patient was placed upon a diet of 1660 calories containing 44 g. of carbohydrate, 78 g. of protein, and 130 g. of fat, and whilst on this diet his urine contained a small amount of sugar, whilst his blood-sugar was found to be 0·09 per cent. one hour after the mid-day meal. This suggested that his renal threshold for sugar was low. He was given 25 g. of dextrose and it was found that his renal threshold was below 0·11 per cent.

I decided to see the effect of a meal rich in carbohydrates, and on June 6th he was given a lunch containing as much meat and vegetable as he liked, along with a large helping of suet pudding and plenty of syrup. Samples of blood were taken at intervals of 20 minutes; at 2.10 P.M. his blood-sugar was found to be 0·30 per cent., it rose to 0·33 per cent., where it remained until 3.25 P.M., then it fell to 0·30 per cent., and was still 0·30 per cent. at 4.40 P.M. This was evidence that he was suffering from mild diabetes.

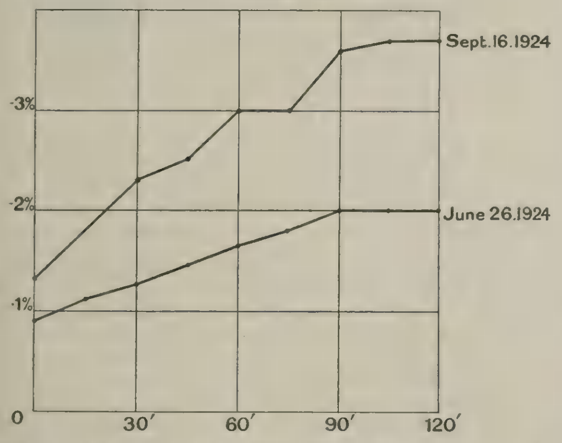
On June 17th he was given 75 g. of dextrose by the mouth at 1 P.M. An hour later his blood-sugar was 0·30 per cent.; 90 minutes after the dose it rose to 0·38 per cent. and had dropped to 0·18 per cent. three hours after the administration of the dextrose. This observation was corroborative evidence that the patient was suffering from diabetes mellitus, based not only on the excessive rise, but also the fact that after three hours the blood-sugar was double the normal fasting. Since the history left no doubt that he had duodenal ulcer as well, it seemed advisable to determine the efficiency of his carbohydrate metabolism before submitting him to operation. On June 24th he was given an intravenous injection of a 10 per cent. solution of dextrose at the rate of 1 c.cm. per minute for three hours. His blood-sugar started at 0·10 per cent. and did not rise above 0·14 per cent.; obviously the dose of sugar was too small to exercise fully the sugar-burning and storing function.

Therefore another intravenous injection had to be given. On June 26th a 20 per cent. solution of dextrose was injected intravenously at the rate of 3 c.cm. per minute for two hours. The blood-sugar started at 0·08 per cent. and rose to 0·20 per cent. after 90 minutes, where it remained for the following half hour. (Chart 1.) This curve proved, since it did not rise above 0·2 per cent., that the patient was able to store and burn sugar at the rate of nearly 0·6 g. dextrose per kilo body-weight per hour, instead of 0·8 g. dextrose per kilo body-weight per hour, which is considered to be normal. In other words, his carbohydrate metabolism proved to have an efficiency of 75 per cent. In the near future I shall offer the further interpretation of this curve along with many others of a similar type.

Operation.—The patient was then transferred to the surgeon. An ulcer was found on the anterior surface of the duodenum; the gall-bladder was thickened; a posterior gastro-jejunostomy was performed; the appendix was looked at, but not removed. The patient made an uninterrupted recovery. Was fed on Benger's food, and later upon custard, jellies, milk pudding, bread and butter, and fish.

The day after the operation the urine contained a considerable quantity of sugar, this gradually diminished, until the eighth day, when it was free. The urine remained sugar-free until the twenty-second day, when minute traces reappeared, but was quite free again later. The patient left the hospital on July 29th, 1924, free from pain and apparently greatly improved.

CHART 1.

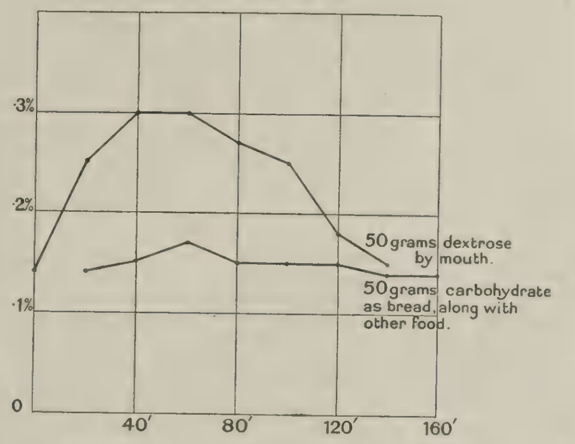


The question arose as to how far the operation had raised or depressed his sugar-burning capacity. Was the apparent improvement due to gastro-jejunostomy delaying absorption? On Sept. 16th intravenous injection of a 20 per cent. solution of dextrose was given for two hours in a manner exactly similar to the injection of June 26th. It was found that his blood-sugar rose to 0·37 per cent. after two hours instead of 0·2 per cent. There was loss of sugar in the urine at least equal to that during the previous intravenous injection. This observation proved that the patient's carbohydrate metabolism had been depressed by the operation. (See Chart 1.)

How can we account for the apparent improvement? The glycosuria was absent after operation in spite of a diet containing a fair amount of carbohydrate. In order to determine whether the operation had interfered with rate of absorption and also raised the renal threshold for dextrose the following observations were made.

On Sept. 20th the patient was given 50 g. of dextrose at 10 A.M., after he had had breakfast. His blood-sugar started at 0·22 per cent. and rose to 0·3 per cent. after 60 minutes and fell to 0·13 per cent. after 120 minutes. On Sept. 22nd he had breakfast at 9.30 A.M., two poached eggs on toast, cup of coffee and milk, 2 oz. of bread; the carbohydrate content of this meal was approximately 50 g. His blood-sugar did not rise above 0·17 per cent. after that meal, the highest being reached at 60 minutes, and later on the same day a second observation was carried out; 50 g. of dextrose was given at 2.5 P.M. His blood-sugar started at 0·13 per cent., rose to 0·3 per cent. after 40 minutes, and fell to 0·15 per cent. after 140 minutes (Chart 2).

CHART 2.



I think from this observation we may reasonably conclude that his power of absorbing starch had been diminished, and also from the fact that in spite of his blood-sugar rising to the region of 0·15 per cent. after an ordinary breakfast, and his urine, as a rule, being sugar-free, his renal threshold had been raised.

The operation in this case, as in many cases, led to the progress of the disease, due to the administration of an anæsthetic. In my experience it is extremely rare for a general anæsthetic, other perhaps than nitrous oxide and oxygen, not to lead to a definite deterioration of the carbohydrate metabolism in cases of diabetes mellitus.

WELLCOME HISTORICAL MEDICAL MUSEUM.—The museum, at 54A, Wigmore-street, London, W., will be closed for alteration and reorganisation from Dec. 1st until the end of May. Since the foundation of the Wellcome Historical Medical Museum in 1913, there have constantly been additions of important historical objects acquired by purchase, donation, and permanent loan. The growth of the collections has been so great that extensive alterations in the museum and a complete rearrangement of the exhibits have become necessary. The reorganisation will be of such a thorough character that the Director, Mr. Henry S. Wellcome, has decided to close the institution for several months. Although this may cause temporary inconvenience to medical and other scientific research workers and students, the change, when effected, will prove of great advantage by rendering the arrangement and classification more systematic, and the objects more accessible for inspection and study. Important additions have been made recently to the technical staff. Mr. L. W. G. Malcolm, M.Sc. Camb., F.R.S.E., who has gained distinction in the field of anthropology and allied sciences, has been appointed conservator. Mr. Charles R. Hewitt, who for 22 years was connected with the library of the Royal College of Surgeons of England and 13 years librarian of the Royal Society of Medicine, has been appointed chief librarian.

A MULTIPLE ELECTRICAL STETHOSCOPE.

By JENNER HOSKIN, M.D. Camb.,
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The instrument on which my investigations have been made is the outcome of a large number of experiments, whose aim has been to provide the means of increasing the intensity of sounds produced within the heart and lungs without distortion, and of enabling several persons to listen to them simultaneously.

Historical.

Cabot[1] devised a mechanism whereby, with the aid of levers tapping on drums and of organ-bellows connected with a megaphone, the sounds of the heart and lungs could be imitated, and demonstrated it before the American Medical Association at Boston in 1906. Normal heart sounds and murmurs were transmitted electrically and recorded graphically by Einthoven [2] in 1907. In 1910 Brown [3] reproduced heart sounds by a tuned mechanical relay, consisting of a single microphonic contact and an electro-magnetic element. The sounds were transmitted audibly, but with a considerable degree of distortion, over a commercial telephone line in London.

The earliest developmental work on electrical stethoscopes was centred about the carbon transmitter and other microphonic contact devices. Williams [4] was the first to make use of an electro-magnetic transmitter, and in 1921 with this type of transmitter and a two-stage amplifier he secured more accurate graphic records of murmurs. In the same year Squier,[5] using a carbon transmitter amplified normal heart sounds to a group of physicians. In 1923 Abbott,[6] by means of a transmitter, tuned to exclude all sounds except those of very low frequencies, amplified heart sounds and distributed them through a loud-speaker, as did Jacobsohn [7] about the same time in Berlin. The present instrument is, however, largely the result of the experiments of Cabot and Gamble [8] at the Massachusetts General Hospital and their coöperation with the Western Electric Company, who have designed it to their requirements. A multiple electrical stethoscope was first used by them for classroom lectures in 1923.

Description of Instrument.

The instrument used by me, which is a further improvement on that of Cabot and Gamble, consists of the following main parts, assembled in a portable cabinet about the size of a tea-wagon : (1) an electromagnetic transmitter ; (2) a three-stage amplifier ; (3) a series of electrical filters ; (4) a number of output receivers ; (5) one six-volt storage battery and one 130-volt " B " battery.

The *electromagnetic transmitter or microphone* is equipped with a special vibratory element, which is placed in direct contact with the patient's skin. It is insensitive to air-waves, and is provided with a special hand grip to prevent the vibrations of the operator's hand from causing undesirable noises. Owing to the high magnification of the sounds necessary, it has been found impossible to use a carbon transmitter or microphone, as the loose contacts introduce a certain amount of noise, which, when amplified along with the faint sounds of interest, tends to obscure them. This is known as the microphone roar, and cannot be eliminated.

The electromagnetic transmitter requires a more powerful amplification, but in a great measure gets rid of this noise. The *three-stage amplifier* employs resistance coupling between the first and second stages, and transformer coupling between the second and third stages, using two high impedance vacuum valves for the first two stages and a low impedance or " power " valve to furnish an adequate energy output in the third stage. This amplifier is capable of a power amplification of 100 million times, corresponding to an increase in intensity over the reproduction amplitude of the ordinary Bell's stethoscope of over 1000 times. There is a potentiometer between the first and second valves, which makes it possible to increase the amplification by small steps, each step giving twice the amplitude of the preceding one.

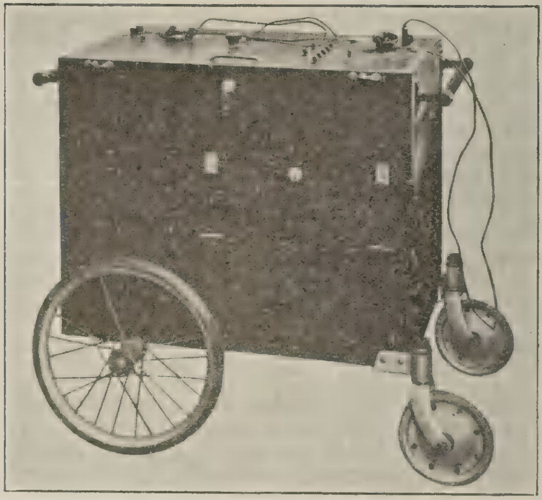
A preliminary analysis with *electrical filters* of sounds of clinical interest tended to show that these were composed largely of frequencies below 1000 cycles, and as the sound frequencies differed widely, it was found of great advantage to permit concentration on any given sound by the use of electrical filters. The function of filters is to allow sounds of certain frequencies to pass and to cut off those of other frequencies.

There are three types of filters—low-pass, high-pass, and band-pass. Low-pass filters allow currents below a particular cut-off frequency to pass freely, at the same time diminishing very considerably the transmission of those of higher frequency. High-pass filters do the opposite. A low-pass filter and a high-pass filter connected in series constitute a band-pass filter, which only allows the passage of currents of a certain range of frequencies.

The instrument has five filters whose cut-off frequencies have been based on 100 hospital cases of cardiac and pulmonary conditions. They are as follows : Low-pass, 130, 400, 650, 1100 ; high-pass, 130.

For example, the use of a low-pass 400 combined with a high-pass 130 would constitute a band-pass filter permitting the exclusive passage of frequencies between 130 and 400 cycles.

The *output receivers* are on the principle of those of the telephone, and consist of an electromagnetic diaphragm provided with a special cap and nipple, which is designed to fit the tubing of the binaural stethoscope in place of the ordinary chest-piece. Each receiver is provided with a spring clip for attachment to the observer's clothing, so as to leave both hands free for manipulating the control switches of the amplifier and filters. There are ten receiver-jacks, through which any number of receiver circuits up to ten may be connected. The receivers are connected in parallel in the output circuit, so that the volume of sound tends to decrease with the number of receivers in use. A volume control switch, however, is provided for maintaining efficient reproduction, whatever the number of receivers connected in the circuit.



The Multiple Electrical Stethoscope.

Special Uses of the Instrument.

My investigations have been directed to the following uses of the instrument : (1) Examination of the fœtal heart in the later stages of pregnancy. (2) Value of the instrument for ordinary teaching purposes. (3) Value for bedside demonstration of cardiac cases too ill to permit individual examination by a number of students. (4) Diagnosis of difficult heart cases. (5) Value for investigation of pulmonary conditions.

The amplification of the sound is controlled by the moving of a hand along the periphery of a circular disc, marked with the numbers 1 to 22, each number approximately doubling the amplitude of the preceding one. It was found that, when the filters were not in use, the intensity equalled that of the ordinary Bell's stethoscope when the hand was pointing to 8 or 9, but when the filters were in use the hand had to be advanced up to 11 or 12 to obtain the adequate volume of sound.

I investigated the fœtal heart sounds in the later months of pregnancy in a few cases. The fœtal heart could be heard distinctly using the low-pass filter with the hand of the amplifier about 15 to 18, and on advancing the hand still further the intensity of the sounds could be increased to an almost overwhelming degree. A sound which was probably the placental souffle could also be heard, and investigations are being made with a view to the possibility of diagnosing the position of the placental site by this means. Without the filters there was a tendency to "roaring," especially with high amplification.

The normal heart sounds are best heard with the low-pass 130, which cuts off most of the murmurs and pulmonary sounds. This filter, however, allows the sounds of a bass or baritone voice to pass. The low-pass 400 is useful for distinguishing presystolic murmurs and certain low-pitched systolic and diastolic murmurs. The low-pass 650 seems to be the most useful of all the filters for heart murmurs, as the majority are of frequencies below this. The low-pass 1100 brings out a few of the very high-pitched murmurs and high-pitched râles, but its usefulness is impaired by the amount of external noise which becomes audible when the higher frequencies are allowed to pass. The high-pass 130 has been found extremely useful in conjunction with the low-pass 400 and with the low-pass 650, especially with the latter. This has the effect of greatly diminishing the intensity of, whilst not obliterating, the heart sounds themselves, and so enabling a more thorough concentration on the murmurs. In general, the low-pass 130 has been found the best for the examination of fœtal heart sounds and for distinguishing alterations from the normal of the ordinary heart sounds. The low-pass 400 appears the most efficacious for distinguishing presystolic murmurs. Their determination is rather a matter of accuracy of timing than of hearing, and so it is of advantage to allow the full passage of the heart sounds. For distinguishing aortic diastolic murmurs the band-pass filter formed by low-pass 650 and high-pass 130 has been found to be the most useful.

My investigations have been mainly directed to the heart, but a few pulmonary conditions have been examined. I have been somewhat disappointed with the instrument in this connexion, as the breath sounds appeared to be so altered in pitch and character by the different filters as to make the differentiation of the various types of breathing difficult and uncertain, whilst without the filters it is difficult to separate the external sounds from those in the chest. I feel, however, that further investigation with the instrument in pulmonary conditions is necessary before forming a definite opinion as to its usefulness for this purpose.

The instrument has a definite though limited use in teaching beginners to recognise heart sounds and murmurs. Frequently they take a considerable time to become conversant with what they hear on listening to a heart, and the increased amplitude and the separation of the sounds and murmurs by means of the filters may tend to help them in their early training in auscultation. For more advanced students the instrument has been found satisfactory for the purpose of demonstrating cases in which the interest is centred in the auscultatory phenomena, in that without any external connexions ten persons are able to listen simultaneously, and the teacher can demonstrate the interesting points as they arise.

For diagnostic purposes the electrical stethoscope has, in my opinion, a definite sphere of usefulness as a means of bringing out slight changes in the heart sounds and facilitating the recognition of very faint murmurs such as may be present in some cases of aortic regurgitation. In the bedside demonstration of cardiac cases who are seriously ill the fact of having ten receivers avoids a great deal of the discomfort and fatigue that would ensue through examination by several persons.

There is one point which should be mentioned. In order to obtain the best results very careful adjustment both of the degree of amplification and of the filters is required, and the process of examination, therefore, tends to be a good deal more lengthy than with the ordinary binaural stethoscope.

Suggestions.

There is, in my opinion, room for improvement in diminishing the external noises, which become audible with the higher amplifications. An additional low-pass filter designed to cut off all frequency cycles above 100 would be of great value, both from the point of view of differentiating especially low-pitched murmurs and also for the purpose of eliminating all ordinary voice sounds. This might advantageously replace the low-pass 1100 filter, which has been found to be of very little practical value.

Conclusions.

The multiple electrical stethoscope has, in my opinion, a definite field of usefulness for diagnostic and teaching purposes both in the realms of medicine and obstetrics. I consider, however, it would be a mistaken policy to train students to place undue reliance on the instrument for the following reasons:—

1. It is of the highest importance that their clinical experience should be gained with the ordinary stethoscope, on which they must necessarily rely later on in the course of their practice.

2. In using the multiple stethoscope attention is naturally concentrated on auscultation, which constitutes only one, and in my opinion one of the less important methods whereby a cardiac case is investigated.

My investigations have been made at the Royal Free Hospital with an instrument presented to the hospital by Lord Riddell, its President, of whose generosity I wish to make grateful acknowledgement. I should like to express my indebtness to Dr. A. G. Phear, senior physician to the hospital, who has given me the benefit of his experience both in my investigations and in the writing of this paper. I should also like to thank Mr. Bulloch and other members of the Western Electric Company for the help they have given me in the technical details of the instrument.

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Clinical and Laboratory Notes.

A CASE OF ACHOLURIC JAUNDICE WITH GALL-STONES.

BY H. H. GLEAVE, M.B. LEEDS, M.R.C.P. LOND.,
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AND
ROBERT PLATT, M.D. SHEFF., M.R.C.P. LOND.,
MEDICAL REGISTRAR AND BIOCHEMIST TO THE INFIRMARY.

CASES of acholuric jaundice, complicated by gall-stones, are rare, and the following seems worthy of record.

B., a man of 42 years, had been operated on 15 years ago at St. Mary's Hospital for gall-stones. He was jaundiced at that time. Cholecystostomy was performed, and he was told that he had a large spleen. Since then his skin has always been of a yellowish tinge, and there is a history that his mother's skin was also yellow. He had no further trouble, however, until August, 1923, when he had a typical attack of biliary colic. In August, 1924, he had another attack, and became very deeply jaundiced. He was then seen by Mr. R. St. L. Brockman, of Sheffield. The spleen was still enlarged, and a diagnosis of acholuric jaundice was made, but since the immediate cause of the symptoms was obviously a calculus, Mr. Brockman operated and removed a pigment stone from the ampulla of Vater. There was considerable difficulty in finding the stone, owing to adhesions from the previous operation, and to remove the spleen at the same operation would have been too risky an undertaking. The patient made an uninterrupted recovery, and although he felt very much better, the jaundice never disappeared. The Van den Bergh reaction was therefore done, and showed that the remaining jaundice was of non-obstructive type.

In April, 1925, the case was seen by Dr. A. E. Barnes and Mr. Ernest Finch, and some further tests were done (see later) confirming the diagnosis of acholuric jaundice. On May 15th, 1925, Mr. Finch and Mr. Brockman removed the spleen, one of us (R. P.) performing a blood transfusion while the wound was being stitched up. He again made an uninterrupted recovery, and his jaundice had disappeared within ten days of the operation. He is now feeling very fit in every way (December, 1925).

Observations: Blood Tests Before and After Operation.

—	1/5/25.		Operation (splenectomy) 15/5/25.	29/5/25.	
Red cells .. .. .. Hæmoglobin .. .. Colour-index	3,250,000 67 % 1·03			4,470,000 89 % 0·99	
Blood group	III.			—	
Van den Bergh reaction. (Direct test always negative.)	15 units.			0·7 units.	
Blood cholesterol ..	—			0·18 %	
Hæmolysis to NaCl	Patient.	Control.		Patient.	Control.
Initial. .	0·525	0·425		0·6	0·575
Marked	0·450	0·40		0·525	0·45
Complete	0·425	0·375		—	—
Hæmolysis to saponin	—			Normal (same as control).	

The urine before operation contained a large excess of urobilin.

Report on Pathology and Histology of Spleen.—Naked eye: A large firm spleen, weight 23 oz.; dimensions 7 in. × 5 in. × 1½ to 3 in. A small accessory spleen (about the size of a walnut) was attached at the hilum. About a quarter of the diaphragmatic surface showed signs of adhesions with great thickening of the capsule. There is extreme congestion

Microscopical: There are numerous thick fibrous septa. The Malpighian bodies are present, undoubtedly reduced in size and number. The supporting framework of the capillaries and endothelial cells of the pulp is unusually prominent. There is extreme congestion.

No foci of hæmopoietic tissue are to be seen. There is much brown pigment, giving the reaction of ferric salts ("hæmosiderin"). This is almost entirely confined to the pulp and hardly appears at all in the fibrous septa, capsule, or Malpighian bodies. It is seen chiefly as a diffuse brown staining (green with the Prussian blue reaction) of the endothelial cells forming the reticulum of the pulp. These cells have often delicate branched processes of cytoplasm which, like the body of the cell, are also pigmented, and in some cases the wall of a sinus or capillary is completely formed by such pigmented cells. In some cells, especially mononuclear cells lying free in the pulp, the pigment is seen as discrete granules or in masses distending the cell.

The general picture is that of hyperplasia of the reticulum cells, with deposition of iron pigment to a much greater extent than in health, though not to the degree seen in some cases of pernicious anæmia.

Discussion.

Cases such as the above, though rare, are by no means unknown.[1] Since hæmolytic jaundice differs from obstructive jaundice in that the blood cholesterol instead of being increased is actually lower than normal,[2 3 4] it is interesting to note that the calculus removed at the first operation was a pigment calculus. In some of these cases such calculi have been found to contain no cholesterol whatever.[5] Unfortunately we did not have the opportunity of examining this one. The blood cholesterol was only estimated after the splenectomy, and was found to be normal. A sharp rise after removal of the spleen is apparently the rule in these cases.[2]

In spite of the operation, at which very little blood was lost, the blood count was better a fortnight afterwards than it had been before. (This has, however, been recorded in a case without transfusion.[1]) The transfusion was performed with 450 c.cm. of defibrinated Group IV. blood, by a method modified from that of Colebrook and Storer,[6] no citrate whatever being added. It was the ninth transfusion of a series which has now reached 28, in which defibrinated blood has been used. In none of the 28 cases has there been any reaction following the transfusion, such as occurs in many cases with the citrate method.

The Van den Bergh reaction is of rather exceptional interest. The first test, done soon after the gall-stone was removed, gave a delayed bi-phasic reaction, presumably because some obstructive jaundice still remained, and the indirect method gave a reading of 15 units. The two subsequent tests gave an indirect reaction only, the reading falling from 15 to 0·7 units within a fortnight of splenectomy.

The resistance of the red cells to hypotonic saline was slightly decreased, and remained so after the operation. Most observers report a return to normal after splenectomy,[7 8] others, as in our case, have found no alteration.[2 9] The resistance of the corpuscles to saponin was tested in view of the suggestion of one of the authors (R. P.[10]) that it might on theoretical grounds be increased while the resistance to saline was decreased. In this case it was normal to saponin. Since doing the tests we find that others have found the resistance lowered in acholuric jaundice to both saponin and saline.[11]

The usual histological findings in the spleen of acholuric jaundice are deposition of iron-containing pigment, and distension of the sinuses by red cells.[12 13] In the present case there is also evidence of hyperplasia of the cells of the reticulum.

We are indebted to Mr. Finch and Mr. Brockman for permission to publish this case.

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A CASE OF
RUPTURED ECTOPIC GESTATION.

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This case of ruptured ectopic gestation is of interest as it occurred in an unmarried girl of 18, with no definite history of pelvic inflammation.

The patient was admitted into the Leeds General Infirmary under the care of Mr. Carlton Oldfield on July 4th complaining of great pain in the lower abdomen, particularly on the left side, and of great weakness and thirst.

History.—The menstrual period began at 13, and had always been regular, the onset being every fourth Friday night or Saturday morning, the first few hours being accompanied by a slight dragging pain in the left iliac region. The loss was not excessive, and lasted 4–5 days.

Present Illness.—On Sunday, June 21st, the period began one day late, and continued, though the loss was very slight, until Sunday, June 28th. On that day she had an attack of pain, dragging in character in the left iliac region, and lost quite profusely for about half an hour. Similar attacks occurred daily until July 3rd, when at 9 A.M. in the morning the pain came on suddenly and with great violence, but was not accompanied by bleeding. It was relieved by "a pill," but returned at 7 P.M., and continued until admission, spreading over the whole of the lower abdomen. Vomiting occurred once on July 3rd after eating a biscuit. Patient never fainted, but felt very weak. She had exposed herself to the risk of pregnancy a month before the onset of symptoms.

Condition on Admission.—Temp., 97° F.; pulse, 120; resp., 27. The patient was very pale, the mucous membranes being practically colourless. Abdominal examination: the abdomen moved very little on respiration. Palpation: great tenderness and rigidity over left half of lower abdomen, much less over right half. Percussion: dullness over left lower abdomen extending little way across middle line.

Pelvic examination: the uterus was slightly enlarged, the cervix a little soft and patulous, the external os admitting the tip of the little finger. No bleeding occurred per vaginam. There was great tenderness in left fornix, with a feeling of fullness, but no definite tumour was felt. A diagnosis of ruptured ectopic gestation was made.

Operation.—Laparotomy was performed by Mr. H. W. Symons, of this hospital. On opening the abdomen the peritoneal cavity was found to contain much free blood and some blood clot. Brisk hæmorrhage was taking place from the left tube, which was ruptured in the inner third of the ampullary portion. Left salpingectomy was performed. Left ovary and right tube appeared normal. Right ovary contained a small cyst. All blood clot and free blood was removed from the peritoneal cavity. The ovum was not discovered. The abdomen was closed.

The *pathological report* on the tube made by Miss E. M. Hickman, M.D., was as follows: Typical decidual tissue and very early trophoblast are present with some hæmorrhage. The wall of the tube shows some lymphocytic infiltration.

The patient made an uninterrupted recovery and returned home on July 13th.

Medical Societies.

ROYAL SOCIETY OF MEDICINE.

SECTION OF MEDICINE.

A MEETING of this Section was held on Nov. 24th, with Dr. HUGH THURSFIELD, the President, in the chair.

Prof. H. MACLEAN opened a discussion on

Nephritis.

He said that the old division of this condition into "acute" and "chronic" was the best. The kidney was chiefly an organ for the elimination of water, salts, and waste products. In acute nephritis all its functions were suspended. In the chronic case only one important function was suspended—viz., the elimination of the waste products of nitrogenous metabolism; the organ was able to deal with water and salts. There was no such thing as "chronic parenchymatous" nephritis; either the patient recovered from his acute disease (which was not very common) or he died, or else he passed into a low form of the chronic interstitial nephritis. The books gave different descriptions because the patient was described at different stages. In a typical case of parenchymatous nephritis the one phenomenon present was the large accumulation of fluid; the patient was waterlogged. But the kidney could excrete nitrogenous proteins quite well—the urine was full of them. The clinical picture was one of excessive œdema with albuminuria. When the kidney passed into a state of chronic nephritis it regained its power of excreting water and salts and lost the power to excrete nitrogenous products. A waterlogged patient with vomiting was sometimes diagnosed as a case of uræmia; the vomiting was perhaps due to the fluid, but it was certainly not uræmic. A parenchymatous patient would seem to improve, feeling better and losing some of the fluid, but the change might be really for the worse as he was passing into the chronic condition. In determining the nature of such a case the tests used were helpful.

Urea Estimations.

There was no sense in the elaboration of tests practised in some places; quite as much information was gained from two simple ones—the estimation of blood-urea and of the urea concentration in the urine. For the practitioner the latter was the more important. A high blood-urea was not uncommon in conditions which were not renal at all, but much information could be got from knowing the amount of urea that the patient was capable of excreting under ordinary circumstances. Albumin in the urine was not important except as a hint that there might be something wrong. Albuminuria might be a most serious feature or might mean nothing at all; variations in the amount were not significant except that great variation was not usually found in serious cases. In estimating the urea concentration there was no need to take a 24-hour specimen. The concentration was the important thing, not the total amount. A nephritic case passed a lot of urine in the night when the normal person would not pass any and so might get rid of much the same total amount of urea as the normal person. In doing the urea test the most important point was to starve the patient of fluid for 12 to 15 hours before giving the 15 g. test-meal of urea. Quite often after the period of fluid starvation the urine voided before the test began would be found to contain 3 per cent. of urea, in which case no further testing was necessary. Elaboration of the tests was not only useless but also produced something of a mutiny among the patients.

Treatment.

The best diet for the case of acute nephritis was still debatable, but there was no point in giving large amounts of milk to reduce the protein; it was doubtful, in fact, whether protein did great harm. A small amount of protein could be given with advantage, the main diet being carbohydrates. It was no good trying to "wash out the kidney." The essential feature of the disease was the failure to excrete water, and the kidneys would not wash out, in spite of all the facilities already provided by Nature, such as high blood pressure and a lot of urea in the blood. Urea was one of the best diuretics known, and the addition of another diuretic would not help. It was cardiac œdema that benefited from diuretics. Sooner or later Nature would bring on a diuresis in the renal case, and if this happened to coincide with the administration of some diuretic drug it might be attributed to that drug. The symptoms must be treated as symptoms. The general impression that protein was detrimental to the kidney had been overdone, and many cases did very much better with a fairly liberal amount of protein. Many a patient who failed to improve was really suffering from his treatment—the low, sloppy diet given him. A certain amount of work had been done in America and Germany on the reaction of the kidney to protein, and Prof. MacLean had repeated the experiments. Rabbits fed on protein diet only showed albuminuria and casts and developed apparently a nephritis, but if the rabbit were given the smallest amount of green food along with the protein diet there would be no bad result at all. It seemed clear that it was lack of green food—and probably of the vitamins in it—and not the administration of protein that damaged the kidney. When the symptoms had been established they could be stopped by the addition of green food. There was therefore no experimental evidence that protein was deleterious to the kidney, nor was there much real clinical evidence for the deleterious effect of proteins in an ordinary mild case of nephritis. In acute parenchymatous cases some treatment by drugs or physical means was necessary to get rid of the fluid. On the whole, physical means were better, but large doses of urea helped, as did a diet rich in protein. There was some evidence from America that ammonium chloride in 5–15 g. doses thrice daily for a couple of weeks would sometimes clear up these œdemas, but the difficulty was to distinguish between real reaction to the drug and the coincidence of the natural tendency to get rid of fluid at some stage of the disease.

Prognosis.

Better than clinical evidence was the result of the blood-urea and urea-concentration in the urine tests. It was possible to have a patient with no symptoms at all who was yet bordering on uræmia. While blood pressure and cardiac changes were often associated with renal disease, each might occur independently. The outlook in the cardiac case was bound up with the question of whether or not the kidney would become affected; if it escaped for a few months the prognosis was not bad, but the physician should be very cautious until he had had the patient under observation for at least six months.

Discussion.

Dr. Langdon Brown agreed cordially with what Prof. MacLean had said, and especially welcomed the release from the tyranny of elaborate tests. At a discussion on nephritis 15 years ago he had said that the conventional views might be summed up as restriction of the protein intake, knowledge of the total output of urea in 24 hours, flushing out the kidneys, and the attempt to get elimination through the skin, and he had expressed his belief that every one of these was largely based on error, and should not be regarded as the criteria for the diagnosis, prognosis, and treatment of nephritis. The false idea that albuminuria could be affected by restriction of the protein in the diet was based on some early experiments of Sir D'Arcy Power, who had found an albuminuria in himself after eating a number of eggs. But he had also rowed a course, and the albuminuria he had had was merely the functional albuminuria of adolescence. As a result every nephritic patient had been since told that he must not eat eggs! Patients should not be filled up with proteins, but neither should they be starved of nitrogen, except perhaps in the acute cases. He had used van Noorden's diet, and found patients do well on nothing but fruit-juice and sugar. The urea excreted came from the food, so if the protein was cut down because the urea excretion was low the patient, receiving less and less urea, naturally excreted less until he either became worse or revolted against his treatment. There was a stage in which the hydræmia passed into a failure to excrete things for which the kidney had a threshold. The hot air bath might be a great help. The sweat had been found to contain a great deal of sodium chloride; the removal of the salt caused a reduction of the amount of water retained in the tissues, and the diaphoresis was followed by a daily diuresis. The bath, however, might be dangerous to those who had not much œdema. It must be remembered that although the blood urea was a valuable test, the other and unknown nitrogenous bodies constituted the toxic factor. The proportion of these to urea was not the same in disease as in health. His house physician had had a theory that the administration of hydrochloric acid might turn these amines to harmless chlorides, and certainly the first case to which the acid had been given had greatly improved. The medical profession should realise that many "remedies" for nephritis were futile where they were not actually harmful.

Dr. Lewis Glover said that during the years 1918–1925 906 urine analyses had been done on his patients, and among these 60 males and 90 females had shown some albuminuria. Apparently all these examinations had been useless, and practitioners might as well save their time and their patients' money. Clinical observation had taught him that a small amount of albumin was of no value as an indication of the patient's condition.

Dr. Lewis Smith wondered whether we were not assuming more than we had a right to assume, and whether the present way of investigating nephritis was not too chemical. The kidney was a living substance, not a test-tube to fill up with drugs, which might or might not leak through. We had to ask why some cases get well and others do not. It was still possible that the kidney had an internal secretion. Many years ago he had found that treatment by glycerinated extract of kidney substance gave good results in some cases. He had seen cases a great deal worse for the Epstein treatment, and deplorable results from decapsulation. The skin was a very valuable and often neglected means of helping to relieve the kidney. In his opinion, cases of acute nephritis were better with a milk diet which contained very little protein and some carbohydrate.

Dr. A. Bousfield said that he had seen no case of acute nephritis in his practice; it was almost non-existent, because people were taken so much care of in general practice. Yet he had large numbers of cases of pyelitis, cystitis, and chronic renal disease. The prognosis was extremely difficult. It was important to be sure that the albumin came from the kidney and not from the pelvis or bladder. He had known very acute cystitis follow an overdose of rhubarb and claret, and it was surprising how difficult it was to damage the kidneys; they seemed to be much more resistant to toxic materials than other parts of the urinary tract. That he had had only two fatal cases in the influenza epidemic he ascribed to the routine administration of sodium citrate and sodium phosphate; it had been noted that the fulminating cases in soldiers had had a very acute nephritis; perhaps these two drugs had saved the patients by preventing the nephritis. The treatment of nephritis was preventive rather than curative.

Dr. R. S. Allison said that at Ruthin Castle the type of case was rather that of general practice than of hospitals, the somewhat vague and early case of middle age with headache, giddiness, and gastro-intestinal disturbances. The blood pressure was high, and there would be a trace of albumin. They had been getting satisfactory results with Calvert's modification of Prof. MacLean's urea-concentration test. In this 15 g. of urea were given at bedtime and the urine collected until 7 next morning, when 2 pints of fluid were given and its excretion then observed for two hours. This gave a range between the maximum and minimum concentration which was useful in cases where the simpler test gave anomalous results. In borderline cases there was often a fairly good excretion of urea, but a difference in the diuresis after drinking, the percentage of urea in this stage being distinctly higher than in normal controls. When the two-hour period was extended to four hours it was found that it was a matter of delay in the time of excretion of the water, for the urea concentration fell markedly in the second two-hour period. This might prove a significant point in the detection of fine degrees of renal impairment. He was convinced that enlarged tonsils and adenoids were an important ætiological factor of nephritis in children.

The President said that the prognosis of acute hæmaturic nephritis in children was good; it was a condition that was cured permanently if it was cured at all.

Dr. Arthur Ellis said that where the acid-ammonia ratio was equal the patient was more liable to nephritis than when the ammonia preponderated. The alkaline type was much more liable to sepsis than others, and the kidney might be infected that way rather than through the strain of excretion. He had found magnesium sulphate injections useful in getting the kidney to work; they produced a rapid and efficient emptying of the intestine, and this took a considerable strain off the kidney. For some unknown reason the addition of a hundredth of a grain of physostigmine to the injection led to a very rapid unloading of the œdema.

Reply.

Prof. MacLean, in reply, said that the unanswered question was why two apparently identical cases went different ways, one clearing up, while the other went on to a chronic condition. If the general practitioner could not in some measure use what had been discovered in the laboratory or hospital, then, in his opinion, the investigations were a comparative failure. The Epstein diet, or any régime which included a large amount of fat, meant more fat in the blood, and there was some evidence for the possibility that the œdema tended to be more permanent when there was much fat in the blood. The truth was that very little was known about kidney disease.

SECTION OF BALNEOLOGY
JOINTLY WITH THE
INTERNATIONAL SOCIETY OF MEDICAL HYDROLOGY.

THE TREATMENT OF RHEUMATISM IN INDUSTRY.

A JOINT meeting of these two bodies was held at the Royal Society of Medicine on Nov. 27th, the chair being occupied by Dr. **GUSTAVE MONOD** (Vichy), the President of the International Society, whose aim, he said, was to bring to bear on such subjects as the one to be discussed to-day—chronic rheumatism—the strength which internationalism gave to every question they dealt with. In France the general hospitals were not open to these cases, and the only opportunity open to the people for institutional treatment of them was to attend the thermal hospitals. And as the general hospitals of Paris did not publish statistics concerning rheumatism, it was difficult to know the degree of its prevalence.

National Loss by Rheumatism.

Sir **GEORGE NEWMAN**, Chief Medical Officer of the Ministry of Health, expressed on behalf of the Minister cordial congratulations to the Society and the Section on the efforts they were making to grapple with this formidable and protean disease. Through the channel of Government a survey of the incidence of rheumatism among the insured population of this country had been prepared. He had always felt that the first business was to endeavour to measure its prevalence and its gravity in order that all effort should be properly focused and directed. It was necessary to measure and gauge the problem before it was grappled with; there was a tendency, in all nations, to apply remedies without sufficiently careful diagnosis. In this country an effort had been made to measure both the condition which had to be met and our shortcomings in meeting it. The subject to be considered to-day was chronic non-articular rheumatism, such as was manifested in fibrositis, muscular rheumatism, sciatica, &c., and in the second place the form seen in chronic arthritis. In this country, said Sir George Newman, we were losing—or we were spending in benefit much of which was lost—£2,000,000 per annum in this group of disease, and among the insured population of 14 millions, time equal to 3 million weeks, or 60,000 years, per annum. This amount of invalidity was recognised by the Government as an equally serious burden on the State to that caused by such other diseases as cancer and tuberculosis. There was thus need of active organised treatment, as at present it was quite inadequate; in all countries this particular problem should be tackled.

Means of Dealing with the Disease.

What, Sir George Newman asked, was the sound way of grappling with this disease group? He felt sure it was necessary for greater care to be exercised both in discovery of the cause of the infection or the metabolic change in each case, and in regard to its removal. The old idea of making a frontal attack and dealing with the palpable and obvious was neither scientific nor effective; the profession must face and deal with the foci of infection. This meant, above all else, team-work, various experts combining in hospital to deal with the focus which came into their particular specialty—physician, dentist, radiologist, laryngologist, bacteriologist, surgeon. The second aspect of the combat against this group was the raising of the resistant and reactionary powers of the body. Measures must include thermal, electrical, hydrological, massage, and, indeed, any kind of treatment which would place the body in the best position to make its own great answer. It all came back to the question of the seed and the soil. A third point concerned the handling of the evidence of this morbid process as it represented itself in childhood. A beginning must be made at whatever age the disease process first affected the body. The riddle of end-results could not be answered unless the principles of preventive medicine were applied in childhood also. Rheumatism did not enter into death certification in the same way that other well-known scourges entered, and it must be recognised that this disease group formed a national problem in public medicine.

As regards institutions for treatment, to begin with we had, said Sir George Newman, three or four great spa hospitals, all of which could be used to advance the treatment of this disease. At the Ministry of Health arrangements were being sought by which there could be established an arthritis unit, in which diagnosis, treatment, and prevention could all be represented; and the Ministry hoped that one result of this meeting to-day would be to afford some guidance in this respect.

Holland.

Dr. J. **VAN BREEMEN** (of the Institute for Physical Treatment, Amsterdam) said the report of our Ministry of Health was an exemplary piece of pioneer work, and Holland had nothing to offer on parallel lines. The number of rheumatic patients in Holland was very large, but the scientific study and social means of combating the disease was still in its infancy. Chronic rheumatic symptoms were stubborn non-purulent inflammations of joints, muscles, nerves, and subcutaneous tissues, typical painfulness, and great susceptibility to cold, moisture, and draughts. Four factors must always, he contended, be kept in view: (1) special foci such as in tonsils, teeth, and appendix, or such general conditions as influenza; (2) the constitution, with its tendency to a rheumatic diathesis; (3) derangement of the circulation in the skin; and (4) external circumstances—climate, intoxications, traumata, excessive fatigue. Before instituting treatment each case should be very thoroughly examined. His method with his patients was to first give general treatment directed to improving the circulation, the metabolism, and the state of the nervous system—i.e., by means of baths (steam, hot air, and electric light), douche-massage, and mercury lamp. Next he applied diathermy, local hot air, light baths, and massage as local measures to improve the function of the joints. The form of arthritis known as "rheumatoid tuberculeux" needed actino-therapy, plenty of rest, good food, arsenic, and salt baths. Heroic measures such as strong bath cures or strong steam baths were often injurious here. For arthritis of larger joints he regarded diathermy as of great importance. High-frequency currents often greatly relieved the sufferings of people with a pronounced arthritic diathesis. His view was that the more definite and severe the arthritic diathesis the greater was the influence of diet. This should be sparing, especially in the matter of albumin and carbohydrates. But in rheumatoid tuberculeux a fatty diet was indicated.

It was necessary for the better prevention of invalidity that there should be a wider application of physical treatment and baths, and the skin should be specially studied. There should also be set up clinics and laboratories for conducting a methodical research into this disease group, and it must be recognised that a distinctive manifestation of rheumatism was associated with each occupation. He advocated the formation of an international committee for a large organised effort to combat chronic rheumatism.

Denmark.

Dr. **HANS JANSEN** (Copenhagen) said he included under the term rheumatism all the affections which Sir George Newman embraced in his report of 1924, and urged the importance of getting established an international uniform nomenclature in this branch of medicine. A year ago he, the speaker, pointed out in his country the need for setting up special hospitals for treating these diseases. In Denmark rheumatism accounted for 58,000 sick days per annum; and there were, among men workers there, 42,000 cases of that disease. At the end of 1923, 7237 people were declared to be totally invalided by it, and

14 per cent. had some form of chronic arthritis. There were, in his country, six or seven private sanatoriums where these conditions could be treated, general hospital cases being chiefly acute ones. In 1923, 3000 subjects of rheumatic disease were treated in Danish institutions and privately, but no Government agencies were at work on the subject. The poor were treated entirely free of expense, liberal grants being made towards the cost. It was the impression of himself and his colleagues that a cold and damp climate induced a considerable part of these diseases. Investigation had been made into the subject, including the effects of X rays and radium.

Sweden.

Dr. G. **Kahlmeter** (Stockholm) said that there were no exact statistics as to the incidence of rheumatic diseases in Sweden, but, next to old-age infirmities, articular rheumatism was the most serious cause of invalidity. 9·1 per cent. of all cases of permanent invalidity were due to chronic articular rheumatism, the next highest figure being 5·8, pulmonary tuberculosis. For treatment there were available in the country about 50 spas (during the summer), the institutions for medical treatment set up by the Board of Pensions, and the general hospitals. The spas, however, were not large or modern enough, and were only available during two and a half months in the year. The institutions organised by the Board of Pensions were intended to prevent disablement, and treatment was arranged for all rheumatic diseases and neuroses; they embraced 350 beds. Patients usually remained in them from two to three months, and if necessary had dental and orthopædic care, while some who needed it were taught another trade. Two-thirds of the cost at these establishments was paid by the Board (i.e., the State) and the remainder by the patient. Only patients were taken in who offered some prospect of again becoming self-supporting. The hospitals of the country were only intended for acute cases. Coöperation was of the greatest importance to ensure success in the treatment of these diseases, and the great need in Sweden was for a central arthritic hospital in Stockholm in association with the university clinics, especially for the facilitation of research. This would be one of the great objects of the newly constituted committee for combating rheumatism, of which the speaker was secretary.

Great Britain.

Dr. R. **Fortescue Fox** said many were of the opinion that the kind of cases under discussion were becoming increasingly prevalent. In the case of chronic rheumatism the profession was dealing with sick persons who were not, as a rule, hospital cases, but were cases who could be treated in out-patient departments, or special clinics, and at the spas and health resorts of the country. It was a very difficult matter to apply the physical remedies with the best effect; these cases had to be treated from many sides. Large numbers had an infective element, which ought to be removed if it could be discovered. Other methods which presented themselves were vaccines, thyroid treatment, and drugs. It was certainly a disease of cold and damp climates, and much could be done to counteract the ill-effects of climate by the right use of waters and baths. The claim which had been made that all the British spas could treat chronic rheumatism with success he regarded as a just one. They all had in common one important agency, well-appointed bathing establishments. In a large proportion of cases one could provide effectual and successful treatment by external methods alone, as given under medical direction and with proper skill. It was now clear that a condition of extraordinary sensitiveness underlay the rheumatic state, and in using heat and cold in rheumatic cases one was working with edged tools. He had seen excellent results, but he had also known many failures due to want of knowledge and care. It was very desirable that the benefits due to external treatment at spas should be made available in the towns. Was this work best done in connexion with hospitals, or ought there to be set up rheumatism clinics? In favour of the latter was the fact that intensive study and a proper grouping of maladies could be carried out, and there could be a liaison with institutions which were conducting special research. In such clinics there must be a whole-time expert medical director, with a suitable linkage with research establishments.

Dr. R. L. J. **Llewellyn** pointed out the gravity, from the national health standpoint, of the recent report of the Ministry of Health on the prevalence of rheumatic diseases in this country. Nothing could so raise the resistance of people to rheumatic infection as the discriminating use of hydrotherapeutic procedures, and there was need for these in the case of people employed industrially in the large centres of population. In Great Britain there were between 45,000 and 50,000 children of school age with rheumatic heart disease. Recently in a children's hospital in London it was found that out of 172 cases of rheumatic fever 66 per cent. developed heart disease; 22 of the 172 died and 38 were permanently invalided. One in every five of the population living at the age of 10 would, on the figures collected, succumb to organic heart disease. A campaign against rheumatic diseases similar to that against tuberculosis was much needed.

Dr. M. B. **Ray** said the yearly number of people in Greater London who were likely to seek advice in respect of rheumatic diseases was 60,000. In England and Wales some 372,000 suffered from some form of rheumatism. Not all cases of non-articular rheumatism required treatment other than could be given by the general practitioner. It was, he thought, safe to say that in the London district alone there were 22,000 insured persons who were likely to benefit from more enlightened treatment; a certain number needed in-patient care. Moreover, satisfactory research into causation could only be carried out if patients were constantly under observation.

Switzerland.

Dr. F. **Kornmann** (Ragaz) said the treatment of these cases in Switzerland was available for both the well-to-do and the poor, the latter being assisted by grants from private bodies and from Government endowments. A large proportion of the cases in the country came from Geneva and places on the shores of the lake. The methods of treatment were electricity, baths, ionisation, massage, and protein therapy. Slight and early cases were often entirely cured, chronic cases were sometimes improved, but sometimes these latter proved intractable.

Roumania.

Prof. **Theohary** (Bucharest) said cases of arthritic and chronic rheumatism were treated at four spas in the main, other spas being mud and strong brine ones. Four classes of cases received some form of assistance—namely, civil servants, employers in small industries, labourers, and soldiers and the very poor. The last-named were treated in the sanatoriums organised by the Red Cross. Public bodies in the country were now subscribing increasing amounts to help those among the poorer population who stood in need of spa treatment for chronic ailments.

Spa Treatment.

Dr. **Kerr Pringle** said that seven hydropathic hospitals in this country were entirely devoted to the treatment of these conditions. At Bath the largest hospital had 136 beds, with 1200 patients, while a small one had 10 beds. The Devonshire Hospital at Buxton had 300 beds and 4000 rheumatic cases. St. John's Hospital, Droitwich, had 30 beds with 603 annual cases. At Harrogate the Royal Bath Hospital had 150 beds and 2500 cases. Strathpeffer had 15 beds, and 80 or 90 cases under treatment, while at Woodhall Spa there were 30 beds available for this disease and 188 cases. At all these institutions there were considerable waiting-lists, and many cases yearly had to be refused admission. In Harrogate last season 140 cases had to be refused as unsuitable, without even seeing them. In Bath 12 per cent. of the men had osteo-arthritis, 6·9 per cent. women, while in Buxton the proportions were 6·6 per cent. men, 8 per cent. women. The Ministry of Health figures gave 8 per cent. in men, 9 per cent. in women. He contended that no case should be labelled one of osteo-arthritis unless a verification had been reached by means of X rays. An important matter to be taken into consideration was the environment of the patient. For rheumatic cases the most useful type of bath was the massage-douche, and the paraffin-wax bath at Harrogate had proved distinctly useful in certain types of cases. With regard to results, he said it was difficult to state these in figures. In cases of fibrositis and neuritis good results would be seen within a few weeks of the patient leaving the hospital; but in chronic joint cases it might be months before it could be said that there were definite results, and even then it was a question of degree. Patients' reports on their own condition were well known to be worthless.

Dr. CHARLES W. BUCKLEY spoke of rheumatic disorders in industry in the light of the experience he had gained as physician in the largest mineral water hospital in the country (the Devonshire Hospital), one which dealt with 4000 patients per annum drawn from the industrial classes. These cases among workers could be divided into four groups. In the first group were cases of rheumatic fever with its sequelæ, which might require long treatment, but for which any well-equipped institution would suffice. The second group embraced fibrositis of muscles, nerves, or joints, a group which reacted better to spa treatment than to any other, though some might require continued massage or other physical treatment, and attention to hygiene and diet after returning home. Thirdly, there were the cases of rheumatoid conditions. Many cases were now being sent to spa hospitals who were suffering from chronic osteo-arthritis of such degree as to be incapable of material improvement, and were occupying beds which could be used to greater advantage. Home treatment, where the services of a nurse skilled in massage could be obtained, was best for these, with such orthopædic treatment as could be made available under some scheme. His fourth group were the gouty, and these, he said, reacted more effectively to treatment at a suitable spa than to any other method, and this would definitely reduce the frequency, the severity, and the duration of attacks. The three principal measures required for these diseases were, first, those directed to the cause of the disease. This might be infective, or metabolic, or traumatic; sometimes the cause was dual. Attention to defective elimination was valuable in metabolic and toxic cases. Secondly, there were measures directed to increasing the patients' powers of resistance, by diet, tonics, and the improvement of home conditions. The third class of measures was the most difficult to obtain for the majority of patients—namely, those aiming to remove disabilities and their associated pain. These could only be satisfactorily secured for the industrial classes at present at the spa hospitals, but much might be done elsewhere under a well-organised scheme. Dr. Buckley proceeded to recount the chief advantages possessed by the great spa hospitals for the treatment of the conditions under discussion. There was a need for the education of the public concerning the causative factors and the importance of early treatment; also medical practitioners required more training in the recognition and treatment of ætiological factors. He also advocated the setting up of "rheumatic clinics," where facilities for various examinations could be provided and where the doctor could have consultation over his difficult cases. He felt doubtful as to the possibility of establishing hydrotherapy on any scale, save at the largest centres, though he was convinced of its value. The great need of the moment, he said, was that a skeleton scheme should be devised and put into force, either by the Government, the approved societies, or some other body. Perhaps no more worthy object existed for the activities of the Red Cross Society.

Discussion.

Mr. W. A. APPLETON, an official in the trade-union movement, said his organisation found that 6 to 10 per cent. (varying according to occupation) of the sickness among the workers was due to this disease, and he believed the actual amount of disability among artisans was really much greater than those percentages indicated. There was a need for unified action on the matter, and he would be glad if medical men would talk over the situation with those who were intimately concerned with the industries of the country. People expected the State to do everything, but the State moved slowly.

Dr. MAX BERG (Berlin) expressed the hope that some day Germany would join the League of Nations, and remarked that it would be a great advantage if his country was permitted to join this Society for the scientific study of hydrology, a subject which his countrymen were known to have furthered in a definite degree.

The PRESIDENT thanked the various speakers for their contributions, and expressed the hope that the Section of Balneology of the Royal Society of Medicine would show an active interest in the concerted effort being made to deal with these widespread conditions.

An informal conference in furtherance of future lines of action was held in the afternoon.

ROYAL MEDICO-PSYCHOLOGICAL ASSOCIATION.

AT a quarterly meeting of this Association, held in the rooms of the Medical Society of London on Nov. 17th, Sir FREDERICK MOTT, the President, in the chair, Dr. JOHN CARSWELL read a paper entitled

Insanity and Crime: Some Suggestions Arising out of the Atkin Report.

It could, he said, be taken that, at least in form, the McNaghten Rules had received such fresh support as to preserve them in being for another generation. Yet the medical profession would not admit that the controversy was ended; indeed, there seemed a desire for adjustment of the medical and legal points of view. The rule recommended by the Atkin Committee read as follows:—

> "It should be recognised that a person charged criminally with an offence is irresponsible for his act when the act is committed under an impulse which the person was by mental disease in substance deprived of the power to resist."

The committee added: "It may require legislation to bring this rule into effect," and later, "We have no doubt that if this matter were settled, most of the criticisms from the medical point of view would disappear."

Members of the Association, Dr. Carswell said, would acquit themselves as medical men acquainted with the clinical aspects of disorders of mind of expressing their ideas as to what they might regard as the test of criminal irresponsibility in these terms, which were lawyers' terms, and indeed, all the trouble had arisen in that way. Did the accused know what he was doing? And if he knew, did he know that it was wrong? These were the formulæ framed by lawyers, and the psychiatrist had no responsibility for them. Fitzjames Stephen, in his "History of the Criminal Law," Vol. II., p. 174, after considering Maudsley's observations, said:

> "I understand by the power of self-control the power of attending to general principles of conduct and distant motives and of comparing them calmly and steadily with immediate motives. Diseases of the brain and the nervous system may cause definite intellectual error, and if they do so, their legal effect is that of the innocent mistakes of fact. Far more frequently they affect the will by either destroying altogether or weakening to a greater or less extent, the power of steady, calm attention to any train of thought."

Dr. Carswell went on to say that a series of cases in recent years were available to show that judges had charged juries in the sense indicated, and even in the much debated Ronald True case Justice McCardie left three questions to the jury; the first two were in the terms of the McNaghten Rules, and the last was expressed in these terms:

> "Even if the prisoner knew the physical nature of the act, and that it was morally wrong and punishable by law, yet was he, through mental disease, deprived of the power of controlling his actions at the same time? If yes, then, in my view of the law, the verdict should be 'Guilty but insane.'"

Dr. Carswell said the point he wished to make was the following: All the judges who delivered charges in the sense he had quoted agreed that uncontrollable impulse could be read into the McNaghten Rules—i.e., the rules were logically insufficient unless some such idea could be incorporated with them. The recommendation was not based upon any unproved or doubtful category of mental disorder, nor upon any principle of criminal responsibility not already recognised. His object in this communication had been to start a fresh discussion of the problem of insanity and crime from what he understood to be the point of view of the Atkin Committee, with the hope of reaching some points at which medical men could agree that the legal conception of responsibility of the insane was more in accordance with the clinical facts as they were known to psychiatrists than at present was the case.

Discussion.

Dr. **BARKER SMITH** said that people were responsible in various degrees for what they did, and that was largely proportional to their education and culture. Many men acted with the same quick, unreflective impulse as lower animals. This question of responsibility in a particular person was a question for the medical man, not for the lawyers.

Sir H. **BRYAN DONKIN** said Dr. Carswell seemed to think that the conception of irresistible impulse was implicit in the McNaghten Rules, a very strong statement to make in his, the speaker's, view. And he did not see that any practical result could arise from the view that those ideas were implicit in the rules.

Dr. G. **HENDERSON** said he did not know that the term "irresistible impulse" had ever been properly defined, yet it was due that this Association should have a definition of it. In medico-legal cases the question of responsibility constantly came up, and if this question of irresistible impulse was likely to be brought into them, the issue would be more complicated than at present. Another important kind of case was that in which a prisoner's state of mind was questioned, and sometimes the man would be sent to a criminal asylum without having been tried—i.e., without the question having been decided whether he had committed the crime or not. He suggested it would be well to try to arrive at that point in the cases in which there was a certain amount of doubt.

Dr. G. D. **MCRAE** said a very important question arising out of this discussion was, "Is an insane man a criminal, whatever he does?" To him, it was cruel to say that a man ailing mentally was guilty for anything he did, and he regarded the expression "criminal lunatic" as archaic. An individual should be tried to prove whether he committed the act, or not. If he did commit the act but was found to be insane, the verdict should be "Proven but insane," for "guilty" in this relation was out of place. The question of responsibility should be left to the legal people. It had been said that medical superintendents of mental hospitals acknowledged the principle of partial responsibility by placing patients on parole; but the actual fact was that until the patient was certified cured the responsibility for him while out on parole attached still to the medical superintendent.

Dr. T. B. **HYSLOP** said that until the medical profession awakened to the fact that in these cases it gave evidence on a question which was not at issue—namely, that of insanity, and the judge charged the jury on the question of responsibility, they would always be playing at cross purposes, and working under those absurd McNaghten Rules, which had caused grave injustice. Medical witnesses should see to it that they were examined and cross-examined on the real question at issue in the case.

Dr. W. C. **SULLIVAN** said the McNaghten Rules were really founded on a contradictory and unjustifiable view of the jury. The rules assured a degree of stupidity on the part of the jury which required that they should be instructed by the judge, and there was the further requirement that the medical evidence should be filtered through the strainer of the McNaghten Rules. The doctor giving evidence had no opportunity of expressing his views in full and in clinical terms, because the assumption was that the jury could not understand them. Yet that same jury was supposed to be gifted to the much greater degree required to distinguish between an act being irresistible and one which was unresisted. The present state of things resulted from excluding the jury from having a fair issue placed before them, hence the question was placed in the hands of the judge. It must always be borne in mind that there were very few murderers in whom something abnormal could not be found, and that abnormality could be magnified by medical witnesses to produce a verdict of "Guilty but insane"; but if the matter were left to the jury they would form their own opinion of the facts and on the history and the various episodes brought out.

Dr. J. M. **MACKENZIE** asked whether irresistible impulse was supposed to operate in persons who were sane, as well as the insane. If so, where could the line of demarcation be drawn? Much might be learned on that from Dr. Rivers's book, "Instinct and the Unconscious."

Mr. D. **CARSWELL** spoke from the legal standpoint. He agreed that some of the hard things which had been said about the McNaghten Rules were justified, but asked how medical men proposed to get rid of them, as they were operative. He therefore advocated attempts being made to arrive at a concordat with the legal profession on the matter. He knew at least three senses in which the phrase "irresistible impulse" was used by lawyers.

Dr. J. G. **SOUTAR** remarked that even after all this argument he had never yet seen a case in which he could say that irresistible impulse was the only evidence of mental disorder in a person. When such a plea was advanced, investigation showed that a definite idea had preceded the particular act, perhaps for a long time. Impulsive acts were known to occur in perfectly sane people, and in them it was well known that the acts did not indicate insanity. If the McNaghten Rules could be wiped out, members of the Association would be in a much better position as medical witnesses. The medical man had to testify to the facts, and leave it to the judge and jury to say whether the facts testified to by skilled observers were indicative of that degree of unsoundness of mind which rendered a person irresponsible for his acts.

Dr. **PERCY SMITH** said the Association had done its best to show that the McNaghten Rules should be done away with, and that every case should be tried on its merits, with the fullest possible evidence. But the profession had been saddled with the rules by the verdict of the Court of Appeal in the True case, when Lord Birkenhead said they were the law of the land.

Dr. **CARSWELL**, in a brief reply, said he recognised that the Association had remained steadfast to its attitude; that the business of the medical man was to testify to the state of mind of the accused. That was the only logically sound position.

Reviews and Notices of Books.

DISEASES OF THE CHEST.

Physical Diagnosis of Diseases of the Chest. By JOSEPH H. PRATT, A.M., M.D., and GEORGE E. BUSHNELL, Ph.D., M.D. London and Philadelphia: W. B. Saunders Company. 1925. Pp. 522. 24*s.*

THE authors divide their work into two parts. The first deals with the physical signs of the lung, the second with those of the heart. They rightly insist that the study of physical diagnosis should begin with the normal chest and proceed from that to the abnormal. Consequently they devote a special chapter to a careful survey of the localised peculiarities of the chest in health. The physics of percussion and auscultation are discussed in detail, and in general sound reasons are offered for the various phenomena observed. A full chapter is reserved for the changes due to the presence of tuberculosis. Attention is drawn to the adventitious sounds often heard in the costo-pleural sinus and to the mistake sometimes made of interpreting them as evidence of pleurisy.

The second portion of the book, devoted to a study of the physical diagnosis of the various cardiac conditions, is particularly well arranged and lucidly expressed. We would suggest that pulsation in the second right interspace is more likely to be due to retraction of the lung owing to tuberculosis than to mitral stenosis. There is a refreshing candour in the statements that "it is not easy to time murmurs accurately," and that "when instructors claim that they can do so when the heart-rate is rapid, students may comfort themselves with the knowledge that the teachers are probably mistaken and are overrating their auditory ability." On p. 371 Mackenzie *or* Burnley should, of course, read Mackenzie of Burnley.

The book can be placed with confidence in the hands of the student.

DISEASES OF THE EYE.

Swanzy's Handbook of the Diseases of the Eye and their Treatment. Thirteenth edition. Edited by LOUIS WERNER, M.B., F.R.C.S.I., Professor of Ophthalmology, University College, Dublin. London: H. K. Lewis and Co. 1925. Pp. 698. 21*s.*

THERE will always be a demand for an ophthalmic text-book neither bulky nor costly, but complete enough to satisfy the needs of the student. Twenty years ago Swanzy's text-book was deservedly reputed to be the best of its sort. To-day it has to compete with others of its size, but undoubtedly it remains one of the best. The structure of the book is substantially the same as in 1919, the date of the twelfth edition. There are some additions which add 25 pages to the book, and the whole is completely revised. The most notable alteration is that whereas in former editions diseases of the choroid were dealt with along with those of the iris and ciliary body as all belonging to the uveal tract, in the present edition choroidal diseases are classified along with retinal ones. If this is not so correct from the morphological point of view it is certainly more convenient from the clinical. In the chapter on diseases of the iris, which has been largely rewritten, we note that dental infection is hardly mentioned as a cause of inflammation of the uveal tract. Since Mr. William Lang drew attention to the subject some years ago it has come to be considered a by no means unusual cause. It would perhaps assist the student if writers of text-books were to indicate on which parts of their subject differences of opinion are legitimate. For instance, if the student is told anything at all about the pathology of retinitis pigmentosa it is only fair that he should know that different authorities hold two diametrically opposed views on it.

One of the features of this volume is the excellence of the illustrations. Of the few that have been added in the present edition perhaps the most important are the diagrams which illustrate the relations between the different parts of the visual cortex of one side and the corresponding parts of the visual fields. As we remarked in our review of the twelfth edition, the work would be improved by a short chapter on the therapeutics of the eyes including local anæsthetics. There is an unusually full appendix on the visual requirements for the public services which are not the same as when the last edition was published.

SURGERY.

Modern Surgery—General and Operative. Ninth edition. By JOHN CHALMERS DACOSTA, M.D., LL.D., F.A.C.S., Professor of Surgery, Jefferson Medical College, Philadelphia; Consulting Surgeon, Philadelphia General Hospital. London and Philadelphia: W. B. Saunders Company, Ltd. 1925. Pp. 1527. 45*s.*

THIS ninth edition has been entirely revised and reset, and though now brought up to date has been kept within the same limits. Certain chapters, previously considered desirable, have been omitted to make room for the new material; and there can be no doubt that asepsis, antisepsis, surgical bacteriology, and bandaging are best relegated to smaller handbooks. This edition was largely prepared by the author while he was on a bed of illness, and many of the chapters are the result of coöperation with his colleagues. The result is a very fine text-book of surgery, which evidently has an established reputation in the United States. One of its most striking features are the chapters at the end of the book on X rays, radium, and electrothermic methods of treatment. They give a detailed account of the uses of these various aids to the surgeon and provide useful notes for reference by practitioners and students. The book is freely illustrated and well got up.

Text-book of Orthopedic Surgery for Students of Medicine. By JAMES WARREN SEVER, M.D., Boston, Massachusetts, Assistant Orthopedic Surgeon, Children's Hospital, Boston; Instructor in Orthopedic Surgery, Harvard Medical School. New York: The Macmillan Company. 1925. Pp. 353. 20*s.*

As its title suggests, this is a rather elementary work, suitable as an introduction to the subject for students of medicine and as a survey of the scope of the specialty for nurses and even for educated laymen. Dr. Sever, in his preface, claims with justice that the book is written in simple terms, and that the student will not be led astray if he follows the advice here given. If, however, information is wanted as to the details of treatment or the technique of an operation it is to a more advanced and pretentious work that the inquirer must turn. For instance, although the author discusses the treatment of congenital dislocation of the hip and the necessary retentive appliances, he gives no hint as to the manipulations which may be necessary for the reduction of the luxation. Some other subjects are dealt with in similar fashion, while tuberculosis of bones and joints receives a good deal of attention. Even here the treatment of Pott's disease (the author has knighted the great Percivall) by the Albee and Hibbs methods is dismissed in a dozen lines of large print, and we have found no allusion to other operative procedures which have been advocated in caries of the spine. Hip disease and its treatment, especially that with the Bradford splint, and tuberculosis of the knee, ankle, and foot are dealt with from a properly conservative point of view. The author's remarks as to the importance of free removal of the diseased bone, if any cutting operation becomes necessary, are to be commended, and we endorse his conclusion that in tuberculosis of the ankle affecting adults the method of choice is generally amputation. The surgery of obstetrical paralysis of the shoulder is dealt with at some length and operations for its relief described, but the references to the operative treatment of other paralyses are sketchy and inadequate. The preparation and fitting of splints and supports are well described, and the technique of plaster-of-Paris is as thorough as would be expected from a member of the Boston School of Orthopædics.

POST-MORTEM APPEARANCES.

By JOAN ROSS, M.B., B.S. Lond., M.R.C.S., L.R.C.P., Assistant Pathologist to St. Mary's Hospital, London. With Preface by E. H. KETTLE, M.D., Professor of Pathology, Welsh National School of Medicine, Cardiff. London: Humphrey Milford, Oxford University Press. 1925. Pp. 216. 7*s.* 6*d.*

THIS well-printed little book sets forth in as compact a form as possible the characteristic post-mortem appearances encountered after death from various causes. The introductory remarks include a brief account of the method of performing a post-mortem examination and of the methods for preserving specimens for museum purposes. Section 1 describes the appearances seen after death from various physical and chemical agents; this is followed by sections dealing with the various diseases, general and systemic. There is a useful appendix giving, among other things, tables of average normal weights and measurements of organs.

The typical post-mortem findings in various types of disease are described in a brief and practical manner, and the book will be found most useful both to the student and to those who may be called upon to perform an occasional post-mortem examination.

DISEASES OF CHILDREN.

Twelfth edition. By the late Sir JAMES F. GOODHART, Bt., F.R.C.P. Edited by G. F. STILL, M.D., F.R.C.P., Physician, King's College Hospital, and Hospital for Sick Children, Great Ormond-street. London: J. and A. Churchill. 1925. Pp. 966. 28*s.*

THERE can be few medical readers who are not familiar with this well-known work, which has now been a standard text-book for 40 years. Dr. Still has carried out with notable success his object of bringing the book up to date without unnecessary alteration of its form. This twelfth edition contains four new chapters; encephalitis and erythrœdema are included for the first time, and separate chapters are devoted to diabetes and the purpuras. A number of minor additions have been made throughout the book. The popularity of "Goodhart and Still" among students and practitioners will be maintained by the new edition.

ANATOMY.

Hand-Atlas of Clinical Anatomy. By A. C. EYCLESHYMER, B.S., Ph.D., M.D., and TOM JONES, B.F.A. London: Henry Kimpton. 1925. Pp. 424. 50*s.*

THIS atlas is a further growth and development of the "Manual of Surgical Anatomy" which was prepared for the use of the American Medical Services during the late war. Female anatomy has been included, and a certain amount of rearrangement and introduction of new plates has taken place. There is no doubt that the work, especially in its original form, met with a very good reception and demand in the country of its birth; equally without doubt it would be of considerable value to anyone called upon to carry out some surgical work, but possessing little experience to direct him and no anatomical memory as a guide. We confess, however, that we feel some disappointment with the book. It is little more than a collection, necessarily incomplete, of plates of gross anatomy. Such anatomy should be unnecessary for the operating surgeon, although it is conceivable that he might be glad of some anatomical advice in out-of-the-way circumstances. There are many points of surgical interest which could usefully find a place in an anatomical work for which we have looked here in vain—for example, the varieties in the cystic artery, or the palmar relations which are so fundamental in Kanavel's work on infections of the hand. A figure is certainly given from Kanavel, but no attention is paid to the areolar palmar spaces and their relations, and in the scheme of incisions on p. 274 the value of the lines shown would be vastly increased if there were some references or an explanatory diagram similar to those in the figure on p. 128. As in most books with many figures, some slips have missed the eye of the proof reader; we cannot help feeling doubt, too, about the nerve to which attention is called on p. 125. The figures are clear and good, and those showing usual incisions are among the best we have seen. A full and good explanatory index ends the volume, which is well produced and printed.

A Short History of Anatomy. By RICHARD H. HUNTER, M.D., Lecturer in Anatomy, Queen's University, Belfast. London: John Bale, Sons and Danielsson. 1925. Pp. 51. 2*s.*

THE time of a student of to-day is so taken up with things that have to be done that it would be cruel to suggest the further task of historical research, but this booklet, containing a quantum of reliable information, can be read through in a very short time, and will give the reader an idea of when some of these masters of ancient medicine had their being and of some of the things they did. Only those who love these dim, old, half-forgotten figures will try to get on better terms with them, but all ought to understand that medicine and its relations are not growths of yesterday and to-day, but that their roots were planted in very remote soils, and that their upgrowth was fostered in the past by many great and learned men. We would like to see brochures like this one in the hands of all students of medicine.

SYMPATHETIC DISORDER.

Vagotonies, Sympathicotonies, Neurotonies. Les états de désequilibre du système nerveux organo-végétatif. By A. C. GUILLAUME. Paris: Masson et Cie. 1925. Pp. 281. Fr.14.

THE output of books dealing with the sympathetic nervous system has been on the increase during the last ten years, in particular since the clinician began to apply to his own studies the conclusions drawn from experimental and pharmacological researches by the physiologist. These volumes, as must be admitted by those who have had occasion to read and test them, have been of rather pronounced inequality in merit, for not a few have been characterised by superficiality and too many by the tendency to simplify the subject by ignoring its complexities; still another fault is the habit of interpreting obscure phenomena by reference to mechanisms which have themselves scarcely emerged from obscurity.

On perusal of Dr. Guillaume's handy volume we think we may say these imperfections are less in evidence than usual in books dealing with its topic. The author takes the well-known dicta of Eppinger and Hess as to the differentiation between the two clinical types of vagotonus and sympathicotonus, and after an independent study of his own comes to the conclusion that mixed types are more common than either of these, and stresses the importance of recognising, as is too often forgotten, that the phenomena attributable to sympathetic disorder which the clinician encounters are occurring in an intact organism and not in organs which have been isolated as in most physiological and pharmacological experiments. His book really serves as a kind of introduction to the subject, and it is one which we consider will repay close examination, for the author is temperate in his assertions and cautious in his conclusions.

NEUROLOGICAL DIAGNOSIS.

Kompendium der topischen Gehirn- und Rückenmarksdiagnostik. Sixth revised and enlarged edition. By ROBERT BING, Professor in the University of Berne. Berlin and Vienna: Urban and Schwarzenberg. 1925. With 102 illustrations. Pp. 242. M.9.90.

WE have on several occasions given hearty recommendation to this now well-known and appreciated compendium of neurological diagnosis. It has appeared, we are informed, in Spanish, Russian, Polish, French, and Hungarian editions, as well as in English. Its commendable features are its relative uncomplexity, its clarity of exposition, the absence of controversial matter, and the conspicuously useful and simple diagrams scattered liberally through its pages. Learning is thus rendered as easy as possible by every device known to the teaching expert. On previous occasions we have found statements open to criticism and in need of correction, and it is satisfactory to note that some at least of these have been altered; in particular, it is now stated (p. 201) that certain involuntary movements are not caused by "irritation" but are of the nature of release phenomena. On the other hand, we consider the statement (p. 228, footnote) that spasmodic laughing and crying may be caused by the "irritation" of lesions in the vicinity of the thalamic reflex centres unfortunate and in need of modification.

L'Innervation périphérique. By Dr. EMILE VILLIGER, Professor in the University of Bâle. French translation by Dr. PIERRE HOFF, Chef des travaux anatomiques at the University of Geneva. Paris: E. Le François. 1925. With 66 illustrations. Pp. 214. Fr.22.

FOR the student of nervous anatomy a book such as that of Prof. Villiger is certain to prove useful and practical, though its title rather belies its contents. Not only is the peripheral nervous system in the strict sense fully described, but there are also sections dealing with nerve roots and their distribution, muscles and their innervation and actions, the sympathetic nervous system, and the central connexions of both motor and sensory nerves; the author has also managed to incorporate a few paragraphs on the clinical aspect of lesions of the motor and sensory tracts. The French translation reads easily and clearly.

PHYSIOLOGY OF REPRODUCTION.

Reproduction in the Rabbit. By JOHN HAMMOND. Edinburgh: Oliver and Boyd. 1925. With 20 plates and 40 tables. Pp. 210. 15*s.*

ANIMALS multiply in a variety of ways—sexually, by parthenogenesis, polyembryony, or budding. Even more diverse in detail are the breeding methods of different mammals. Reproduction is, indeed, one of the best illustrations of the great truth that the constants—i.e., the laws—of biology are the ends rather than the means, the results rather than the mechanisms by which they are achieved. Our knowledge of the physiology of œstrus, ovulation, conception, pregnancy and the rest seems much less advanced than it ought to be, and this delay is to a large extent due to attempts to generalise from one or two examples. This is now obviously impossible and the facts have to be worked out for each species separately. Mr. Hammond has here put together the data he has accumulated during several years' work at the School of Agriculture at Cambridge, and Dr. F. H. A. Marshall contributes an introduction and a chapter on the formation of the corpus luteum. The result is an interesting and well-documented work in which the processes in the rabbit are described and compared with those known in other animals. It will also be technically useful to those engaged in breeding rabbits. Unfortunately, the illustrations are with few exceptions poor.

POPULAR HYGIENE.

The Fight against Infection. By G. E. F. STAMMERS, Lieut.-Colonel R.A.M.C. (ret.). London: Faber and Gwyer. 1925. With 24 text figures. Pp. 214. 2*s.* 6*d.*

NEVER were the general public so anxious to be healthy as they are now, and this excellent little book will help them to understand what infection by parasites is and how it may be dealt with. After a general account of germs and resistance, Colonel Stammers takes ankylostomiasis, malaria, plague, sleeping-sickness, and enteric diseases as more detailed examples, and interpolates an admirable discourse on the text that scientific discovery is a process and not an event. It is, we think, rather a mistake to describe so many diseases with which we are now quite unfamiliar. The temptation which the spectacular successes of tropical hygiene offers is difficult to resist, but it is apt to give some impression of unreality; the quieter triumphs of domestic health work are in the end, perhaps, more convincing. It is, of course, difficult to say exactly how infantile mortality has been reduced to about one half of what it used to be, but the lay public would appreciate from this homely example that the fight against infection is one in which everyone can take part in quite a real daily way.

A TEXT-BOOK OF GENERAL BACTERIOLOGY.

Eighth edition. By EDWIN O. JORDAN, Ph.D., Professor of Bacteriology in the University of Chicago and in Rush Medical College. London and Philadelphia: W. B. Saunders Company. 1925. Pp. 752. 25*s.*

THE eighth edition of this text-book has still left it of manageable size and pleasing appearance. The section upon anaerobes has been revised and the book brought up to date by the inclusion of recent work upon the bacteriophage, scarlet fever, tularæmia, &c. There is little to add to the praise given to the book in the reviews of former editions. It maintains its position as one of the best balanced and most scholarly of the current text-books upon bacteriology and has the additional charm of viewing the subject widely, not being slavishly devoted to the pathogenic micro-organisms to the exclusion of due consideration of other forms.

JOURNALS.

JOURNAL OF INDUSTRIAL HYGIENE.—In the issue for October a contrast is drawn by D. R. Wilson, after a visit to America, between the way in which investigations into industrial activity are being conducted in that country and at home. Much work is being done in both places, but in America there is less coördination of research, rather more laboratory experiments, and rather less observations under industrial conditions. On the other hand, coöperation between engineers, technicians, physiologists, and psychologists is closer in America, and employers and operatives combine more to support inquiries of common benefit to both. Persons interested in experiments with animals on dust inhalation will find a useful note by C. K. Drinker, P. Drinker, and K. R. Drinker. These workers point out that by adding 10 per cent. carbon dioxide dusty atmospheres breathing is increased, anp comparatively short exposures result in a uniform and satisfactory distribution of dust particles in the pulmonary alveoli. By this means periods of exposure can be usefully shortened.—The chief article deals with the manufacture and repair of electric accumulators; it is contributed by C. W. Price and J. C. Bridge, two Home Office inspectors, who present the results of an intensive investigation of the industry in Great Britain. The industry, owing to demands for motor-cars and for wireless apparatus, has improved of late, with a great increase in cases of lead poisoning. They show how close is the incidence of cases to efficient exhaust ventilation for carrying away dust and fumes. For this purpose the various processes of casting the lead plates, of pasting them, of trimming and assembling them is described. The workroom conditions in which these processes are carried out are dealt with in detail, and recommendations are made for improving these conditions and so minimising the risk of lead poisoning and improving the general health of the workers. Arrangements for medical examination and accommodation for personal hygiene are considered. The result of this report led to the establishment of a new code of regulations, which came into force this year. The way in which this code strengthens the various safeguards is pointed out. This article is one of considerable importance.——November, 1925: A comparison of past diseases in university students coming from rural and urban districts is presented by W. P. Shepard and H. S. Diehl. Data were collected from 3478 males and about 1500 females. The common diseases in order of frequency were: measles, mumps, chicken-pox, whooping-cough, influenza, tonsillitis, scarlet fever, pneumonia, small-pox, and diphtheria. Students from rural communities were highest in past histories of pleurisy, pneumonia, rheumatism, small-pox, and tuberculosis; and lowest in chicken-pox, diphtheria, tonsillitis, typhoid fever, and whooping-cough. In contrast students from large cities were highest for chorea, and lowest for appendicitis, influenza, measles, mumps, pleurisy, and small-pox. The totals did not rise or fall regularly according to density of population. The areas were grouped into rural, villages, towns, small cities, and large cities, in order of population density. The totals for past history of infectious diseases came out: villages 317, small cities 296, towns 252, rural 232, and large cities 231. The present position of factory legislation in Australia is stated by D. G. Robertson. Each State in the Commonwealth has wide legislative powers and functions. Hence there is no one code prevailing throughout. The State of Victoria was the first to adopt legislation, which has been progressive and modelled upon the legislation of Great Britain. New South Wales, although an industrial State, followed later and has not progressed so far. Other States have legislation, but it is not extensive. There is need to-day for improvement and for the wider adoption of a uniform code. Action on these lines was taken at an industrial hygiene conference held in 1922, at which Dr. A. J. Lanza was present. Certain resolutions were then adopted as recommendations for consideration by the several States; these resolutions are given in detail. Since this conference, legislative advance has been made in Victoria and New South Wales, where medical inspectors of industrial hygiene have been appointed, and further powers to call for periodical medical examination have been taken in Western Australia.—The most important paper is one by M. S. Iszard, who recounts an investigation into the effect of calcium when inspired as a dust upon tuberculosis. Calcium hydrate was found not to be harmful to the lungs of rabbits, and to stimulate migration of macrophages containing silica particles. Inoculation with tubercle bacilli after a period of dust inhalation showed slight retardation in the development of tuberculous lesions. When lime dusting occurred after inoculation the retardation was more distinct. The investigation upon which these conclusions are based are carefully described and represent an extensive piece of useful, although somewhat negative, research.

Public Health Services.

REPORTS OF MEDICAL OFFICERS OF HEALTH.

THE following are some of the health statistics for 1924 of a group chiefly composed of counties and combined districts:—

Name of district.	Estimated mid-year population (R.-G.).	Birth-rate.	Death-rates per 1000 of the population.				Death-rates per 1000 births.		
			All causes.	Tuberculosis.	Cancer.	Resp. diseases with influenza.	Neonatal mortality.	Infant mortality.	Maternal mort. from childbirth.
Cambridgeshire (excluding Cambridge) ..	70,950	15·9	12·9	0·90	1·89	2·2	—	52	2·7
Cambridge B. ..	59,120	14·1	11·8	1·04	1·42	2·1	21	55	7·2
Heston and Isleworth U.D. ..	46,970	17·7	10·8	1·04	1·34	2·0	27	60	1·2
W. Gloucestershire C.D. ..	48,862	18·4	11·2	0·51	1·53	2·1	30	62	—
Herefordshire C.D.	50,371	18·7	13·6	0·76	1·67	2·6	24	52	3·2
Dumfries* ..	44,530	22·2	14·3	1·07	1·55	2·3	—	74	9·1
Isle of Ely ..	76,070	18·7	11·5	0·68	1·56	1·8	34	59	4·9
Stirling*	78,270	23·7	13·2	0·89	1·19	2·7	31	74	7·0
Dumbarton* ..	53,114	19·1	13·0	0·79	1·43	2·7	41	89	4·9

* Statistics of landward areas of county. B. = Borough.
C.D. = Combined district. U.D. = Urban district.
— = Figures not available.

Cambridgeshire.

Dr. Frank Robinson reports progress in the scheme for the provision of nurse-midwives in all the rural parishes of the county. The county council does not subsidise midwives directly but makes grants for the training and maintenance of midwives who will also act as sick nurses in the employment of the District Nursing Association and as infant life protection visitors for the Poor-law guardians. Of the 50 midwives now practising in the county only three are untrained, and of the 129 rural parishes there remain only 28 for which nurse-midwives have not been provided. Progress has also been made in the provision of pure water. In the Newmarket Rural District 103 water samples were analysed and 83 were found to be polluted; and in one parish out of 100 houses supplied by polluted wells 55 have been connected with the public water main. In other districts new wells have been sunk.

Cambridge.

Dr. Andrew J. Laird points out that the maternal mortality in Cambridge for the years 1919–22 was 2·39, as compared with 4·11 for England and Wales. Little use has been made so far of the arrangements for antenatal supervision, and Dr. Alice L. Robson suggests that the confidence of doctors and midwives can best be secured by the appointment of a specialist for this work. There is an arrangement for sending special antenatal cases to the out-patient department of Addenbrooke's Hospital; a fee of 10*s.* 6*d.* is charged for consultation and report and 2*s.* 6*d.* for each subsequent attendance. Arrangements have also been made with the same hospital for the admission of difficult cases of labour, normal confinement cases where the home conditions are prejudicial, and children under 5 suffering from ophthalmia neonatorum, epidemic diarrhœa, and non-infectious ailments. The charges made are 7*s.* per day for each adult (in addition to the surgeon's fee according to the scale under the Midwives Act), and 5*s.* per day for each child. Mr. W. B. Grandison, the public dental officer, reports on the dental scheme for mothers and pre-school children. When a baby has cut four teeth it is enrolled in the scheme and the mother promises to bring it to the clinic at least every six months thereafter. If this arrangement were carried out, says Mr. Grandison, every child should enter school free from dental disease, but unhappily there are lapses from grace. During 1924 67 mothers were recommended for dental treatment and 47 availed themselves of it. "Dental work for expectant and nursing mothers is almost confined to the complete elimination of teeth and their replacement by artificial substitutes." The exceptions are those mothers who previously attended the school dental clinic. During 1924 150 houses were erected, all with State assistance; 68 of them were put up by the local authority and 82 by other persons. There are at present 1324 applicants for corporation houses and many of these have been waiting for years.

Heston and Isleworth Urban District.

Dr. Elwin H. Nash reports that at the end of the year there were 51 private wells in use for water-supply and that in nine of these an alternative supply existed for domestic purposes. In 63 instances taps were placed on the main in compliance with a notice from the health department, in substitution for taps on pipes connected with inaccessible and uncovered cisterns. This remedies a very common source of pollution of the pure water from the main. A small outbreak of mild small-pox is recorded, in which seven secondary cases were infected by a tramp. Dr. Nash describes recurrent outbreaks of diphtheria during 1923–24 in a residential school dealing mainly with Poor-law boys. At the end of 1924 the whole school was Schick-tested and the non-immunes immunised. Of the 50 members of the staff, 15 were Schick-positive. Of the 489 boys 63 were positive. Two of the nurses when immunised had severe reactions, and the third had a very bad arm and was ill for six weeks. In the opinion of Dr. R. A. O'Brien, of the Wellcome Laboratories, the symptoms in the nurses were due to protein sensitiveness. None of the children showed the slightest inconvenience. There were 33 notifications of encephalitis lethargica, which occurred in two small outbreaks in a small and populous area of Hounslow. The housing conditions in the district remain unsatisfactory. In his school report Dr. Nash draws attention to the large amount of futile work involved in treating ear discharges and would like to see ionisation made available in the district. He is also opposed to the routine removal of enlarged tonsils, as he finds that many disappear after a septic mouth has been cleaned up. Complete enucleation is, he considers, the only proper method.

West Gloucestershire (United District).

Surgeon-Captain O. W. Andrews reports that progress has been made in the building of new houses, and mentions that many people object to being obliged to supply fixed baths which they say may be used as potato stores. The small-pox epidemic in the East Dean district began in April, 1923, and the last case was notified in May, 1924. Of the other districts in the combination Gloucester Rural was the only one affected by small-pox. Altogether there were 311 cases in East Dean with two deaths, and 24 cases in Gloucester Rural with no deaths. Dr. G. F. Rigden finds that there is a slow awakening of the public to the importance of antenatal work, but that "we are still far from the day of routine antenatal examination."

Herefordshire Combined District.

Dr. Herbert Jones states that one-fourth of the cottage houses have a distant water-supply, making a proper standard of cleanliness difficult. It is a constant practice to complete the building of a cottage before ascertaining whether there is a suitable water-supply available. The duty thrown on the rural district councils of enforcing a proper water-supply is not satisfactorily carried out. Of 80 samples of water examined, 32 were reported unfit. In many parts of the district "dip" wells are the source of supply. These are readily polluted, but when they are situated on a slope they can easily be made safe by enclosing them and providing a pipe outlet to slightly lower ground. The slop drains from many cottages discharge into the roadside ditch, and this practice has even been permitted in newly erected houses. The routine inspection of houses was discontinued in 1914 and is still in abeyance owing to the increased cost of executing repairs. Dr. Jones considers that it should be resumed. He discusses the difficulty of providing water-supply and drainage in rural districts, and expresses the opinion that financial assistance from the State should be forthcoming towards the provision of rural water-supplies and sewage disposal works. Between 10,000 and 12,000 men, women, and children come into the combined district for about four weeks in August and September for the hop-picking. Their employers pay much greater regard to the welfare of pickers than formerly. The Bromyard and Ledbury Councils, however, have not yet adopted the by-laws drawn up for the accommodation of hop-pickers in other districts.

Dumfries.

Dr. J. Maxwell Ross states that the increase of occupied houses is due partly to building but also to reoccupation of empty houses. In the village of Kirkconnel there are 21 one-roomed houses still used, six of which are occupied by three persons, five by four persons, one by five, and four by six. The analysis of the samples of Esk water supplied to Gretna and Eastriggs showed that the chemical treatment adopted, though expensive, was effective. The need for using the Esk water ceased in November when the gravitation supply became available. The River Nitt has been surveyed from its rise in Ayrshire to its fall into the Solway, and a good deal of pollution was found in Dumfries-shire owing to coal-washing and various sewage effluents. At one school an arrangement was found by which water from a mill stream was diverted to a channel under the seat of the latrine, the fæcal matter being washed out through a pipe on to the banks of the stream. This is reminiscent of the methods adopted by the monks at Kirkstall Abbey and other monasteries. There is practically no industrial pollution of the River Annan, and the sewage effluents of Moffat and Lockerbie are fairly purified before they reach the main stream.

Isle of Ely.

Dr. J. Pixton Walker reports that the death-rate in illegitimate infants has gone down from 120 to 80, and goes on to state that "a detailed examination of dates of birth of first-born children has shown us whole villages where forced marriages must have been the rule rather than the exception." About 60 samples of milk are examined annually under the Food and Drugs Acts, and the analyst's report has shown curious results during the last three years. The average fat-content in 1922, 1923, and 1924 was 3·58 per cent., 3·65 per cent., and 3·78 per cent. respectively, whilst the average non-fatty solids for the same years was 8·74 per cent., 8·72 per cent., and 8·56 per cent. The county council does not subsidise the Isle of Ely County Nursing Association, which will "probably soon be disbanded for lack of interest and of funds." A handsome nurses' home, however, with a maternity ward, has been erected for the March District Nursing Association, and the chairman of the county council at the opening proceedings stated that the county council pay £3 per annum towards administration expenses for every nurse employed by nursing associations who performs duties for the county council.

Stirling.

Dr. T. Adam reports that the new coördinated scheme of medical and nursing services which has been in operation since the beginning of 1924 has worked very smoothly and has given every satisfaction. Consideration is given to the suggestion of the Board of Health that fever nurses should spend two years in training at a fever hospital and subsequently two years in a general hospital so as to qualify, after examination, for both the fever register and the general register. It is pointed out that for the purpose a unit area is needed which includes both types of hospital. The central district of the county forms such an area readily, and the probationer staff of the two fever hospitals could easily pass on to the Stirling Royal Infirmary to complete their training after two years at the fever hospitals. Dr. Adam cordially approves of the new proposals. No antenatal clinics have so far been established in the county. The pollution of the rivers of the county by paper mills is receiving considerable attention.

Dumbarton.

Dr. Thomas Lauder Thomson reports a considerable outbreak of scarlet fever in the western district with which the Dumbarton Joint Hospital was inadequate to cope. There were 515 cases notified, several of which were of a severe type, and there were nine deaths. In two cases the infection spread to dairy farms, but it did not appear that the epidemic was to any appreciable extent milk-borne. Dr. Thomson thinks that the curtailment of the supply of milk to expectant and nursing mothers has caused hardship, especially in districts where there is much unemployment. There is no maternity hospital in the county. Of the 22 midwives practising, 16 have only the "bona-fide" qualification. The institutional accommodation for the treatment of tuberculosis is unsatisfactory. The county council have no control of the institutions used, patients frequently have to wait a long time for admission, and it is almost impossible to find accommodation for non-pulmonary cases. Dr. Thomson advocates the provision of a tuberculosis institution by the committees of the eastern and western districts, either by themselves or jointly with other authorities. The beds required for Dumbarton would be about 30 for pulmonary cases and 15 for non-pulmonary cases. Several improvements in the tuberculosis scheme have been approved, but the question of the provision of the sanatorium, of more dispensaries, and of a bacteriological laboratory is to be further considered.

South-West Kent United Health Area.

Dr. S. Nicol Galbraith reports that the arrangements for the hop-pickers in Kent leave much to be desired. The bad weather of 1924 showed up the unsatisfactory nature of their dwellings. "The sanitation in some camps was deplorable; in some positively indecent." He recommends the appointment of a permanent inspector. Temporary inspectors have done some good, but the time to get defects put right is not during the hop-picking, but between the seasons. In addition to the danger from infections amongst the pickers, other diseases such as rheumatism, pneumonia, and bronchitis have to be considered. Twenty-two deaths were registered among the families of the pickers, including those of 17 children, nine of whom were under 1 year of age. The hoppers' dwellings at East Farleigh come in for special condemnation. As a contrast to the bad conditions, some farmers provide model dwellings and offer prizes to the pickers for the best kept homes. It is suggested that the temporary hut encampment used for soldiers at home and abroad during the war should be taken as the minimum standard. The hop-picking in Kent means the migration of about 60,000 people into South-West Kent, and it is obvious that their accommodation is a problem which demands very careful consideration both from the point of view of the health of the pickers and of the menace to the health of the permanent residents.

INFECTIOUS DISEASE IN ENGLAND AND WALES DURING THE WEEK ENDED NOV. 21st, 1925.

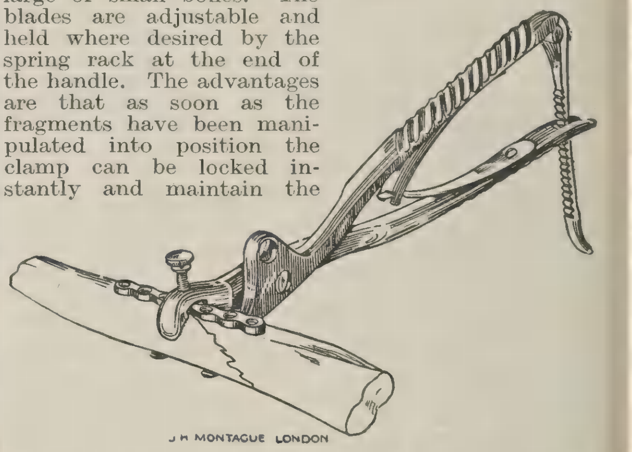
Notifications.—The following cases of infectious disease were notified during the week:—Small-pox, 68; scarlet fever, 2464; diphtheria, 1031; enteric fever, 44; pneumonia, 1186 (as compared with 889 in the previous week); puerperal fever, 53; cerebro-spinal fever, 8; acute poliomyelitis, 11; encephalitis lethargica, 30; continued fever, 1; dysentery, 7; ophthalmia neonatorum, 98. There were no cases of cholera, plague, or typhus notified during the week.

Deaths.—In the aggregate of great towns, including London, there were 3 deaths from enteric fever (none in London), 49 from measles, 13 from scarlet fever, 30 from whooping-cough, 29 from diphtheria, and 61 from influenza. In London itself there were 8 deaths from diphtheria and 24 deaths of infants under 2 years of age from diarrhœa and enteritis.

New Inventions.

COMBINED BONE AND PLATE HOLDING FORCEPS.

I have had in use for nearly two years a combined bone and plate holding forceps, which has given every satisfaction. It consists of two blades made on the principle of the well-known Peters forceps for large or small bones. The blades are adjustable and held where desired by the spring rack at the end of the handle. The advantages are that as soon as the fragments have been manipulated into position the clamp can be locked instantly and maintain the correct alignment while the bone is secured with the plate, which is slipped under the groove in the upper blade without disturbing the position of the fragments. The operation thus becomes much easier and shorter and no assistance is required, except to help in bringing the fragments into apposition.



The forceps was made for me by J. H. Montague, 69, New Bond-street, W. 1.

K. F. D. Waters, M.B., B.Ch. Oxf.

St. Stephen's Hospital, Fulham-road, S.W.

Ladies' Medical Golfing Society. — Prizewinners for 1925 of the Open Bogey Competition in aid of the Royal Medical Benevolent Fund Guild are as follows: Best aggregate of five cards: (scratch), Miss I. Doxford, 16 down; (handicap), Class 1, Mrs. Atkins, 5 down; Class 2, Miss Magee, all square. Best single card: Class 1, Mrs. Hopkins, 6 up; Class 2, Mrs. Perry, 7 up. Best aggregate of two cards: (England) Miss E. Steel, 12 up; (Scotland) Mrs. Ritchie, 2 up. This competition was started in 1923 with the object of endowing a scholarship for the Royal Medical Benevolent Fund Guild. As this object has now been attained, the competition will be discontinued. The thanks of the committee are offered to all those players who have contributed to this successful conclusion.

THE LANCET.

LONDON: SATURDAY, DECEMBER 5, 1925.

MEDICINE AND MONOPOLY.

Sir **Donald MacAlister**'s presidential address to the General Medical Council[1] usefully re-published one elementary fact with which the medical profession is more familiar than is the lay public. Whatever else it may be, the medical profession is not a rigidly protected trade-union. There is a register of medical practitioners who, after certain years of prescribed training, have passed certain examinations and who may be said to have pledged themselves to maintain certain standards. In 1858, when the various branches of the profession were united under one governing body, Parliament created this system of registration because it was "expedient that persons requiring medical aid should be enabled to distinguish qualified from unqualified practitioners." But, with the two exceptions of dentistry and midwifery, which Sir **Donald MacAlister** mentioned, there is no monopoly of practice in any of the healing services. We make no apology for elaborating this simple statement of the legal position. No woman may, habitually and for gain, attend women in childbirth (except, of course, under the direction of a qualified medical practitioner or in emergency) unless certified and enrolled under the Midwives Act; the prohibition is backed by a fine of £10. No person (save for certain obviously necessary exceptions) may practise dentistry, unless registered under the Dentists Act; the prohibition is backed by a fine of £100. But in creating the machinery of registration for medical practitioners Parliament has never said that no one is to give medical or surgical treatment unless his name is on the Register maintained by the General Medical Council. The registered medical practitioner has no more monopoly than the registered veterinary surgeon. Exclusion from the Medical Register is not exclusion from practice.

Hence in the present state of the law, as Sir **Donald MacAlister** reminded us, the man whose name is taken off the Register is as free to practise as if he had not been registered and the public is as free to employ him if they think fit. He escapes the jurisdiction of the Council and, if he has previously found difficulty in balancing himself upon the border-line of the recognised professional standards which the Council exists to maintain, he is happier if that feat is no longer required of him. There are, it is true, certain limited privileges which the unregistered practitioner does not enjoy. He cannot hold a medical appointment in the Army or Navy or in public institutions. He cannot give a medical certificate of illness, injury, or death; and he cannot prescribe a dangerous drug. If our countrymen think these restrictions are unfair to the unregistered, Parliament can abolish them. Meanwhile we can only repeat that, though a penalty awaits any unauthorised person who extracts a tooth or attends a woman in childbirth, nevertheless, in all other fields of medicine or surgery any person, whether registered or not, may perform any sort of operation upon the human body without liability, provided that his ministrations do not result in such untoward consequences as to give rise to a charge of culpable negligence. Even at this point, in the domain of civil and criminal liability for negligence, the law makes no difference whatever between the registered and the unregistered practitioner, the qualified and the unqualified. Probably judge and jury are more likely to find that treatment has been unskilful if administered by an unqualified person; to that extent a plaintiff brings his action against an unqualified person with better prospect of success than against qualified doctors and surgeons; but this bias, for what it is worth, arises from an inference of fact and not from a principle of law.

Let it not be said, then, that the medical profession is a jealously preserved trade-union. Do other professions have to tolerate like liberty of competition from unregistered practitioners? What opportunities of practice has the solicitor whose name is removed from the rolls of the Law Society? What right of audience has the barrister who is disbarred by the Inn which called him? There must be many members of the public who realise that more and not less protection is needed in the sphere of medicine and surgery. There must be many medical practitioners who, when they see their practice invaded by the unqualified, marvel more at the impotence of the General Medical Council than at the occasional exercise of its power of removal from the Register.

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THE MUSCULAR DYSTROPHIES.

The neurologist, perhaps more than any other specialist in the profession, is often called on to deal with diseased conditions not attributable to extrinsic morbid action but to intrinsic, possibly congenital, defect. Among the groups with which he is concerned none is at once more simple of recognition and more difficult of treatment than that of the muscular dystrophies. Clinical classification and description are doubtless essential as a step towards the problem of ætiology and of treatment, but in respect of this particular class of case they have not taken us very far. The essential clinical features of the majority of the dystrophies have been familiar for half a century, and although difference of opinion still exists as regards their interrelation we are not likely to reach any rational conception for treatment from clinical considerations alone. Nor, regrettably, can we rely with confidence solely on the observations of the histo-pathologist, for he handles dead material, muscular cicatrices from investigation of which it is well-nigh hopeless to expect the deduction of any data concerning incipient morbid action. The end-results of the myopathies and of the myelopathies, as far as the histological picture of the muscle substance is concerned, are for practical purposes not to be distinguished. Even when recourse is made to biopsy, microscopical examination reveals a pathological state but not a morbid process, while the interpretation of the actual tissue findings is not a little difficult.

It is not to be wondered at, therefore, that dissatisfaction with mere clinical description and with the limitations of morbid anatomy should lead the neurologist who has imaginative curiosity to tackle the problem of the muscular dystrophies from other viewpoints. Prof. **Edwin Bramwell**, whose Bradshaw lecture on this subject appeared in our columns last week, is to be congratulated on breaking away from neurological commonplaces and on his ingenious and suggestive endeavour to find an ætiological basis for these myopathic degenerations in disorder of the sympathetic and perhaps the neuroglandular systems. In brief outline of Prof. Bramwell's position, we may say that he is impressed by the idea that the muscles likely to be affected in the muscular dystrophies are those especially associated with the function of fixation, and he also supposes, relying on the observations of Babinski and Onanoff, that such muscles as develop early in the fœtus are especially predisposed to suffer myopathically; he takes the further view that those muscles which can be shown to have acquired their functions late or to have taken on new functions are likely to prove more resistant. Applying, in the next place, the dual innervation theory as elaborated in recent years by not a few workers, among whom the late Dr. Irvine Hunter holds a prominent position, the lecturer admits as an attractive speculation the possibility of muscular weakness and wasting being due to implication of the sympathetically innervated elements in muscle structure, and submits clinical instances which may be taken to indicate that, in some cases at least, disorders of the endocrine system coexist with muscular dystrophy, though he is inclined to attribute both of these to an (unknown) common cause, rather than to pronounce the latter secondary to the former.

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[1] The Lancet, Nov. 28th p. 1133.

Undoubtedly the clinical data calculated to prove of most suggestiveness in this difficult problem are those which can fairly be taken to indicate, if not to demonstrate, that other systems than the muscular are involved. For example, the vasomotor mottling of the limbs often seen in pseudohypertrophic muscular paralysis, the somatic infantilism of not a few cases of the same clinical variety, and, indeed, their occasional trait of relative mental infantilism, the frequent smallness of the bones, and other points to which allusion might be made, all serve justifiably to make the clinician think of the interjection of a neural or neuroglandular factor in the dystrophic conditions usually held in these days to be intrinsically muscular in origin. An explanation of such phenomena must be sought. Insufficient attention has hitherto been directed by the neuropathologist investigating the morbid anatomy of the dystrophies to the state of the cells of the intermediolateral tract in the spinal cord, the central connexion of the sympathetic system, and when a cord is reported to be normal in a dystrophic case we may legitimately ask whether that tract has been specially studied. Even so, however, we do not feel that Prof. Bramwell is on firm ground when he leaves the non-muscular clinical symptoms above alluded to, to apply a questionable hypothesis to a somewhat doubtful clinical distinction. Is it, as a fact, the case that the muscles prone to degeneration are those especially connected with the function of fixation? What is fixation? Sherrington has shown us that the distinction between reflexes of posture and reflexes of movement is not clear-cut; we know that posture is often maintained voluntarily, and that movement is in reality a series of changes of posture. At one time a muscle may be employed kinetically and at another posturally. Prof. Bard, of Geneva, has in recent communications strongly urged the prima facie improbability of two separate mechanisms for fixation and for movement respectively; both on clinical and on physiological grounds the separation is more than a little doubtful. We wish Prof. Bramwell had referred to the implication of the facial musculature in myopathy; the remarkable selectivity, in the Landouzy-Dejerine type, of the circumoral and circumocular groups does not suggest any incidence on "fixation muscles." The specific difference, further, between the "myopathic smile" and the "myasthenic smile," scarcely supports a neuroglandular origin for the former disease if we accept it for the latter; or, alternatively, if it has its place in both conditions it will not by itself explain the clinical differences. The conclusion also drawn by the lecturer, that muscles with new or more recently acquired functions are relatively resistant, seems to run contrary to the general rule of involution as applicable to many other neural diseases with which the physician is familiar.

But the valuable service rendered by Prof. Bramwell in his Bradshaw lecture consists less in the sketching of hypotheses which are open to some criticism and for which a speculative rather than a definitely established basis is offered, since he himself admits with candour that speculation has its limitations; it resides rather in the courageous step he has taken of crystallising dissatisfaction with current views that describe but do not explain, and of applying to a large group of more or less intractable cases an analytical study on fresh lines which is bound to result in advance. His references to biochemical studies of the muscular dystrophies are comparatively few, although he has clearly envisaged the possibilities of progress in that direction; the now rather older work of Dr. E. I. Spriggs has been to some extent lost sight of, but the field is largely uncultivated and will repay any labour that is spent on it.

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RESEARCH IN SCHOOL MEDICINE.

We have already dealt[1] with the general features of Sir George Newman's recent report on the work of the school medical service during 1924. This report, like its predecessor, is no mere compilation of statistical facts and figures. Its pages present us with a living picture of the various branches of that work, its objects, its methods, its obstacles, its achievements, and even its deficiencies, and the whole is infused with a true spirit of idealism, modified only by such economical considerations in administration and organisation as the times make necessary. Throughout, the great aims of the service—prevention of disease, prevention of effects in adult life of disease in childhood, and the promotion of positive health—are kept steadily in view, and, as we read the report, we realise that its success in achieving these objects depends not only upon medical measures, but is intimately bound up with the solution of many social and educational problems. In some degree it is true to say that the school doctor discovers conditions whose causation it is beyond his powers to remove or to alleviate. Disease is found in the school-child which began in pre-school days, or if it only appears at the school age, owes its origin to hereditary causes and environmental conditions that have existed since infancy. Poverty, low wages, large families, bad housing, unsuitable and improperly cooked food, all play their part before the child enters school, and continue to do so during school life, and the persistence of these causes accounts for Sir George Newman's statement that "the number of sick children at the commencement of school life is as large as ever." In matters of dietary, insanitary school accommodation, and hygienic living conditions generally the school doctor can be active as an educationist, instructing either personally or through qualified teachers, the child, the teacher, the parent, and the education committees to whom he is responsible. It is a melancholy fact that too many of our elementary schools are still models of what a school ought not to be, and that the hygiene teacher may have to give his lessons in buildings which violate in almost every possible way the principle he is trying to inculcate. To some extent the same is true of school meals. There is great scope for educative work here, and the report shows that it is not being neglected.

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[1] The Lancet, Nov. 21st, p. 1077.

One of the most interesting sections of the report is that dealing with research work. Ever since the inauguration of the school medical service, individual officers have in such time as they could spare from routine work carried out investigations on special lines, and this report describes some of the more important of these in 1924. The subjects discussed include Rheumatic Infection in Childhood, Goitre, Prevention of Defective Vision Resulting from Squint, Epidemic Encephalitis, Methods of Measuring Fitness, Effects of Infantile Ailments upon Teeth. Obviously, the efficiency and accuracy of result of such work is limited by the fact that the medical officer is only dealing with conditions in his own area, and would be greatly increased if the research was extended to include many areas with differing types of school population. The Board has now instituted a scheme for coördinated research to make this possible, and already four extensive investigations are definitely in being on Enlarged Tonsils and Adenoids, Causes of Defective Vision, Determination of Anthropometric Norms, and Mental Deficiency. For each subject a committee has been formed, consisting of medical officers of the Board, school medical officers, and other experts on the subject, and this committee draws up a schedule of investigation for the use of the medical officers who are asked to take part in it. The methods as described are very comprehensive and include the study of "control" cases. It is proposed, for example, in studying tonsils and adenoids, to inquire minutely into their origin and their earliest symptoms and signs, and also to carry out a following-up investigation over a period of years of cases detected, whether treated or untreated.

It is to be hoped that local authorities will pay heed to Sir GEORGE NEWMAN'S remarks on the importance of research work. As he remarks, "Every year to examine the bodies of a million children without thinking, without building new knowledge, would be a species of mechanical labour, the essential value of which would be lost." The school medical service has an unrivalled amount of material to its hand for purposes of research, and while the routine duties of inspection and treatment of the individual child must not be neglected, local authorities will do well to cultivate the larger vision, and give opportunity to their staffs to partake in such work as is likely to be of benefit to the child of the future.

ROYAL COMMISSION ON NATIONAL HEALTH INSURANCE.—The forty-sixth meeting of the Commission was held at the Home Office, Whitehall, on Nov. 26th, Sir Arthur Worley, and later Lord Lawrence of Kingsgate, in the chair. Evidence was heard from the National Confederation of Employers' Organisations (represented by Mr. J. B. Forbes Watson and Mr. John A Gregorson) on the financial aspects of the health insurance scheme. The Confederation submitted that the present need for relief to industry so as to stimulate employment was so urgent as to warrant a reduction in the weekly contributions of the employers and workers; that the present scheme is over-financed; and that the progressive expenditure on additional benefits is more than this country can afford and more than can be justified on any international comparison. Thereafter, the Commission sat in private to continue their review of the evidence which has been received since they began their work and to consider the questions arising therefrom. Proof copies of the oral evidence and the relative statements submitted at the meetings of Oct. 22nd, 23rd, and 29th, and Nov. 5th (the forty-first, forty-second, forty-third, and forty-fourth days) are now on sale at H.M. Stationery Office, price respectively 1*s.* 6*d.*, 2*s.* 3*d.*, 2*s.* 3*d.*, and 1*s.* 6*d.*

Annotations.

"Ne quid nimis."

VITAL STATISTICS FOR 1924.

THE first part of the Registrar-General's Statistical Review,[1] which has just been issued, contains tabular matter only, the explanatory medico-statistical comments being reserved for future publication. Certain items of medical interest may, however, be culled by those trained in the use of figures. The decline in the rate of infant mortality during the present century remains the outstanding feature of our vital statistics; a reduction from 139 deaths of infants per 1000 deaths in the lowest quinquennial record of last century to 90 in 1916–20 and to 75 in 1924 meaning an improvement phenomenal in extent. It is customary to regard the improvement in infant mortality as limited almost exclusively to the last nine months of infancy, and as being unshared by infant life in the first month after birth. This point cannot be checked historically from the tables in this report, which deals almost solely with the year 1924; but it can be tested geographically from the summarised tables as are given on p. 48. Thus in the aggregate experience of all county boroughs infant mortality at ages under 4 weeks was 31 per cent. higher than it was in the metropolis, and in the aggregate experience of all rural districts was 19 per cent. higher than it was in London. These are average results; and the experience of individual districts in and out of the metropolis separately stated on p. 59 shows much wider ranges of difference. Even the average figures, however, demonstrate how large a part of so-called neonatal mortality is preventable and is being prevented in some parts and not in other parts of the country. The statistics of maternal mortality from childbirth form a further subject of great medical interest. So far as the whole country is concerned, the only historical comparison year by year given in this review is based on the use of rates per million females living. Thus stated, the reduction of mortality from puerperal sepsis from 72 in 1914 to 50 in 1924 requires checking by rates based on the number of births in connexion with which the sepsis occurred. If any importance can be attached to notifications of puerperal fever, there has been no decline in this period. More utilisable evidence is derived from the comparison of total childbirth mortality and mortality from puerperal sepsis given in the review for 1923 and 1924, and correctly stated per 1000 births. The largest ranges of total puerperal mortality for 1924 are from 8·85 in the Isle of Wight, 5·12 in Merionethshire, and 5·01 in Montgomeryshire, to 1·43 in Kesteven and in Northamptonshire, 1·50 in Middlesex, and 1·84 in London. In county boroughs total puerperal mortality ranged from 0·97 in West Ham, 1·14 in Oxford, 1·23 in Huddersfield, 1·30 in Northampton, and 1·30 in Tynemouth, to 4·55 in Blackburn and 5·36 in Bolton. In some of these towns the rates are based on a relatively small experience; but even when this is remembered, there can be no reasonable doubt that the standard of medical and midwifery attendance on women in childbirth is lamentably lower in some areas than in others.

From the point of view of ready comparisons for long periods Table 6 on p. 35 is the most valuable. Typhoid and typhus fever have disappeared from this table, and their place has been taken by tuberculosis; the addition is more welcome than the omission. A second page of long-period comparisons for individual diseases would enhance the value of the review. Perhaps the most impressive items in the existing table are the decreasing toll of measles and whooping-cough on child life. It would certainly appear that these diseases, as causes of death, are being more nearly controlled than in the past; and this appears to be so, even when the possibility of disease cycles of varying virulence is kept in mind. Medical officers of health will regret the belated issue of the sickness notification statistics in this volume instead of in a separate volume, issued not later than April, as was formerly the case. The chief value of these sickness figures lies in the possibility of early comparison between different parts of the country, and the 11 months required to ensure accuracy and completeness in the death returns is a long time to wait.

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[1] Registrar-General's Statistical Review of England and Wales, 1924. Tables. Part I.: Medical. 15*s.*

SEX GLANDS AND ENDOCRINE FUNCTION.

SIX lectures given at the Serotherapeutic Institute of Milan have just been reprinted in book form.[1] The course was designed to elucidate the following problems: Whether there is in the sexual glands an endocrine as well as a generative function; whether it is possible, by transplanting the glands, to utilise their hormones; and whether it is possible to isolate from these glands an active substance like adrenalin or insulin. The subject-matter of these lectures may be briefly set out thus:—

1. *The Sexual Characters, their Cause and Biology.*—Prof. C. Champy, of the Faculty of Medicine of Paris, describes his experiments on salamanders (*Triton alpestris*), in which by starvation (alimentary castration) a sexual inversion is produced. In birds, if a functioning left ovary is excised, the right gland becomes transformed into a testicle and secondary male characteristics appear. He further shows that, while the testicle secretes an exciting hormone which influences the development of the comb in the cock, the horns in the ram, the beard in man, and the thumb gland in the frog, there is also an inhibitory substance in the ovary, a "kalone," which prevents the growth of a comb in the hen. He emphasises the law of "all or nothing." Partial castration shows that there is no direct proportion between the mass of the genital gland and the action of the hormone. This law, as also the existence of an ovarian kalone, shows the necessity of reserve in interpreting the negative experiments of castration in invertebrates in which it can never be certain that some small residuum of the genital gland is left. Hence the hormone acts as a catalyser, the kalone as an inhibitor.

2. *The Laws of Action of Internal Secretions.*—Prof. E. Gley, of the College of France, also describes experiments on cocks to ascertain the relation between the volume of the testicle and length of the comb. He found that the animal with large testicles had a no more perfect comb than one in which a mere nodule remained. He consequently disbelieves in hypo- or hyper-function of the endocrine glands. A given secretion, however, may really be a complex of various products. The substance which determines sexual characters may not be the same as that which presides over the development of the cock's comb, and the thyroid substance which acts on the psyche, may not be identical with the substance which regulates the skeleton. If a given internal secretion is composed not of a single but of several products, and if one of these should be wanting either temporarily or permanently, a dissociation of morphological and functional phenomena would ensue. Cases of partial myxœdema are satisfactorily explained on this hypothesis. Another law of great physiological interest is that of "functional constancy," as shown in the retrogression of sexual characteristics in castrated cocks, characters which can be preserved by the injection of testicular extract at regular intervals.

3. *The Anatomical Basis of Ovarian Correlations.*—Prof. A. C. Bruni, of the Veterinary Institute at Milan, works out the thesis that the production of a morphogenetic hormone capable of stimulating the development of certain characteristics and preventing that of others cannot be ascribed to one part of the ovary rather than to another, but to the whole organ. The thecal and interstitial cells, besides being deposits of nutrient material, are an intermediary between the germinal elements and the somatic. The ovary on this hypothesis would act like other endocrine organs pouring into the blood useful products and abstracting harmful ones.

4. *Correlation between the Psychic System and the Sexual Glands.*—Prof. E. Lugaro, of the University of Turin, gives an interesting summary of the psycho-sexual development of the child, calling attention to pre-puberty misogyny which, in his opinion, is not a "repression" but a temporary redundance of sensuality through virile psychic tendencies. The effect of early castration is a certain degree of infantilism, but no deviation towards femininity. Genius is not a pure sexual characteristic. Discussing dementia præcox, Prof. Lugaro thinks that Mott's researches point to a phase of exhaustion of glandular activity that happens in these patients when, after a period of extraordinary exaltation, the sexual function ceases for ever, nor does he agree with Freud that the delirium, hallucinations, and sexual images are due to a psychogenic mechanism. He attributes mental disturbances at the menopause to thyroid and not ovarian influences, and hyperæsthesia sexualis to other causes than the sexual glands. As to sexual perversion, he thinks the sexual glands only play a part through the generic factor of precocious and exaggerated erotism.

5. *Old Age, and Rejuvenation by Grafting.*—S. Voronoff, of the Laboratory of Experimental Surgery in the College of France, discusses the cause of old age. Unicellular animals reproduce by fission, old age and death do not occur. Higher up in the scale the somatic cells have definitely lost the aptitude of reproducing the complete organism, but can only reproduce parts as in hydra and lumbricus. In the vertebrates even the power of reproducing parts is lost and it remains for the sexual cells to reproduce the species. Old age is due to hardening of the tissues and organs by fibrous material by which the quantity of functioning cells is diminished. The endocrine glands through their hormones act on the nutritive metabolism, on the evolution of the cells, and on their morphology—if they cease to function life becomes impossible. Observations on castrated animals show that testicular hormone directly influences morphological change in all parts of the body, as much of the brain cells as of the epidermis, bones, and other tissues. Such animals when not slaughtered do not live as long as others. Eunuchs become old at 60 and do not live long. Opotherapy only offers a slight palliative to insufficiency or suppression of endocrine glands. Hence the importance of grafting. Prof. Voronoff describes his experiments with grafting testicles on old rams and bulls which recovered not only sexual power, but all the other qualities of young animals. He shows photographic representations of several men, bulls, and rams before and after testicle grafting, claiming that the internal secretion of a young testicle in an old organism activates the multiplication of cells and their metabolism from which results a true rejuvenescence of the body. He claims that the beneficial results of these graftings both in animals and men lasted several years. The photographs are without doubt very striking.

6. *Reactivation of Physical and Mental Force.*—Max Thorek, chief surgeon at the American Hospital in Chicago, deduces from his experiments that the seminiferous and Sertoli cells play no part in the production of libido, sexual power, or sexual characters in the male, but that only the interstitial cells of Leydig have this power. He arrives at this conclusion from the grafting of testicles previously "interstitialised" by X rays. He describes his technique, the peculiarity of which consists in "fenestrating" the tunica albuginea with the actual cautery. He gives a table of the results of 143 cases—in 63 per cent. there was return to a normal condition, while 22 per cent. were unsuccessful. The cases included senility, dementia præcox, neurasthenia, and hypogenitalism. He protests against the prominence given to restoration of sexual function; what is aimed at is the general reactivation of physical and mental force.

These six lectures, written by men who may be considered masters in their special subject, are worthy of careful study. It is to be regretted that they have not as yet been translated into English so as to increase the number of their readers.

BACTERIAL CONTENT OF FÆCES.

IT has long been recognised that living streptococci are practically always present in the fæces of healthy persons. Considerable doubt, however, exists as to the importance that should be attached to variations in the number of colonies of these organisms obtained on plate culture. There are those to whom their occurrence in numbers even remotely approaching those of the coliforms justifies the attribution of pathological activity and the exhibition of a vaccine. Variations in the bacillary forms occurring in the fæces have come in for a good deal of investigation, particularly in America. The influence of diet in this respect is now well recognised, the standard example being the passage from the infantile to the adult type of flora consequent upon the passage from a milk to a mixed diet. That the reverse change from a mixed to a milk diet may in the adult bring about a return to the infantile type of flora has not been so widely recognised, and instances are not wanting in which organisms appearing in the fæces as a result of the ingestion of a diet adopted for the treatment of a disease have been accredited with the causation of the condition. Even more slowly has knowledge accumulated as to the factors governing the streptococcal population of the fæces. This question has lately been investigated by Dr. A. P. Garrod [1] at St. Bartholomew's Hospital with interesting results. Dr. Garrod has been able to demonstrate quite clearly the importance of at least two factors determining the length of survival of streptococci in the fæces. One of these is diet. On a diet rich in carbohydrate streptococci appear in far greater numbers in the fæces than they do on one consisting mostly of proteins. This was well shown by the investigation of the fæces of patients on a modified Allen diet, who showed only 3·3 per cent. of streptococcal colonies on culture as compared with 40 per cent. in individuals on an ordinary diet. In this connexion Dr. Garrod found that whereas streptococci preponderated in the fæces of the horse they were almost absent from those of the lion. A factor even more potent in modifying the number of living streptococci in the fæces is the rate of passage of the intestinal contents through the gut. The more rapid the passage towards the rectum the greater the number of living streptococci appearing in the fæces. This point is illustrated in the accompanying graphs showing the effects respectively of a course of aperients and a course of morphia upon the streptococcal population of the fæces.

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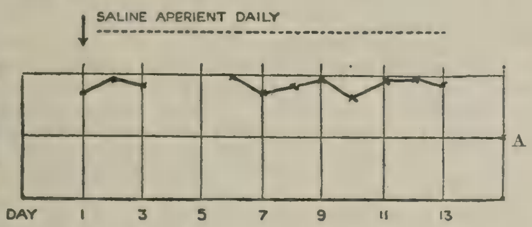
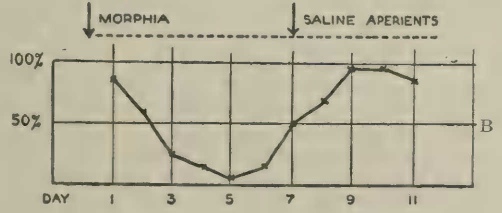
[1] La Funzione Endocrina delle Ghiandole Sessuali. Milan: Istituto Sieroterapico. 1925. Pp. 243. Lire 25.



A. Normal individual: Percentage of streptcccci in fæces.



B. Ditto: Showing effect of constipation.

DOSAGE IN ULTRA-VIOLET THERAPY.

THERE is no less need for a practical method of measuring the doses of radiation used in ultra-violet therapy than in X ray or radium therapy. While nothing is easier than to specify theoretical units, so dear to the heart of the physicist, it is quite another thing with practical units. An illustration of this is the fact that if international agreement on the question of practical X ray units for medical purposes is reached next year, as it probably will be, it is only after 25 years of use of X rays in treatment. In the early days of light therapy, when Finsen was establishing its utility, quantitative methods, apart from the specification of the power consumed by the lamps, were not usual. At present there is a widespread use of open arcs with carbon or tungsten electrodes and of enclosed arcs of which only the mercury vapour type has any considerable vogue. With an open arc of a given type carrying a certain current at a given voltage there may not be much room for big variations in output of radiation during the running of a lamp, but with the mercury-vapour lamp there are two phenomena which preclude a uniformity of output. It has been shown by B. D. Watters that very soon after a mercury-vapour lamp is started the output of radiation diminishes and then increases to a steady level. The degree to which this happens depends on the power applied to the lamp, and the time taken to reach a steady condition may be as long as 15 minutes. The second phenomenon is the increasing opacity of the quartz container in the course of time. If, then, for no other reasons, it will be seen that, in order to know anything definite about the output of radiation from the mercury-vapour lamps, we must measure the radiation emitted by it and not only the power supplied to it.

But the need for some practical method of measurement for both open and closed arcs comes still closer home to clinical investigators who wish to compare their results with those of others in a strictly quantitative way. For practical purposes the method of measuring dosage should be rigid and yet easily practised, while the instrument itself should be portable, robust, and not too costly. The instrument described on p. 1205 by Mr. H. D. Griffith and Dr. J. S. Taylor consists of a cadmium photo-electric cell coupled up with a direct reading electroscope. When the rays from either of the sources mentioned fall upon the cadmium surface, electrons are liberated from the cadmium in quantity proportional to the intensity of the incident rays, and the emission of these electrons is indicated by a movement of the gold leaf of the electroscope. It appears from the description that the instrument fulfils a number of the requirements just mentioned, and it will be interesting to have the experiences of others when the instrument is in general use. The authors, wisely we think, refrain from claiming that the instrument is especially sensitive to that part of the radiation of greatest therapeutic efficiency. As a matter of fact, such terms require much qualifying before they can be scientifically used. Luminous and ultra-violet rays are now used for a very large variety of diseases, and whereas one complaint may benefit from radiation selected from one part of the spectrum, another may be more effectively treated by a different selection. It is not yet certain whether it is beneficial to apply heat radiation simultaneously with rays of low heat equivalent or whether the claim for the antagonistic action of different wave-lengths is substantiated in full. There is room for much investigation in this most promising field of radiotherapy, and it will be helped by methods which are, at any rate, quantitative in aim.

THE DIAGNOSIS OF DYSENTERY THROUGH THE MICROSCOPE.

A CONCISE, informative, and well-illustrated article of some 37 pages, recently published,[1] sets forth the pathology, gross and minute, of bacillary and protozoal dysentery. The method of cytodiagnosis, originally described by Willmore and Shearman,[2] forms the basis of the paper and has been elaborated so as to enable a rapid diagnosis of bacillary dysentery to be made from a microscopical examination of the discharges from the bowel. Should cultural methods of isolating the dysentery bacillus be solely relied upon, in a very high proportion of cases the information will be misleading. In presenting the subject in a manner which can be understood and practised by physicians and laboratory workers in countries where the two main forms of dysentery are rife, this paper has great practical value. The object throughout the paper is to correlate the pathological changes in the bowel wall with the nature and appearance of the cells which appear in the fæcal exudate. Many of the cells, notably the macrophages or clasmatocytes, seen in the fæces of bacillary dysentery closely resemble, to the uninitiated, stages in the life-cycle of *Entamœba histolytica*, and it naturally follows that a great deal of unnecessary confusion has risen with regard to the differential diagnosis, so important from the point of view of treatment, between these two conditions. A close study of the points of differentiation in the cell picture, as set forth in this paper, should dispel any doubts forthwith. A clear account of this subject was badly needed. The microphotographs of the cells which illustrate this article are striking and convincing. The section on treatment, which runs on familiar lines, is admirably handled.

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[1] St. Bartholomew's Hospital Reports, vol. lviii. London: John Murray. 1925. Pp. 53.

[1] Dysentery: Its Diagnosis and Management Through the Microscope. By Frank G. Haughwout, Protozoölogist and Chief, Section of Parasitology, Bureau of Science, Manila, P.I., and George R. Callender, Major Med. Corps, U.S.A., Curator, U.S. Army Medical Museum, Washington, D.C. International Clinics. Vol. II., Series 35. 1925.

[2] THE LANCET, 1918, ii., 200.

RESPIRATION IN ANÆSTHESIA.

THE Dental Board are conferring a benefit by their series of post-graduate lectures on General Anæsthesia, and the benefit will be a great one if the other lectures maintain the standard set up by Prof. Yandell Henderson, who started the series in London, Manchester, and Edinburgh. His subject was control of respiration in anæsthesia by inhalation of CO_2. The lecturer showed how by scientific employment of carbon dioxide as a respiratory stimulant safe and rapid induction of anæsthesia can be assured, and also rapid elimination of the anæsthetic drug with consequent diminution of after-effects, particularly those attributable to so-called acidosis. The practical anæsthetist will naturally not see eye to eye with all the statements of one whose observations are mainly conducted in the laboratory, and the general picture of an open administration drawn by Prof. Henderson is fortunately a caricature of the usual clinical induction. Nevertheless, the lecturer's deductions from his laboratory work and from the phenomena which are sometimes witnessed in the anæsthetising room are sound, and the lines which he lays down for conduct are of value and full of suggestion for the practising anæsthetist. Naturally the latter will have to adapt his doctrine to the circumstances of reality. For example, the principles advocated and demonstrated by Prof. Henderson can only be carried out with apparatus which involves the use of a closely applied face-piece. In practice there are many individuals for whom the one horror of anæsthesia is any device of this sort. These people are not merely fussy or neurotic. Either retching or an intolerable sense of suffocation attacks them when a face-piece is closely applied, and their peculiar disability has to be met of course by some gradual form of administration. These people are not amenable to the lecturer's first rule of good anæsthesia, which is, he states, rapid induction. The second is uniform concentration of vapour, and the third rapid termination. The most important lesson which he enforced, and with which every anæsthetist will agree, is that control of the breathing is the most essential of all factors in securing successful anæsthesia. Respiration, moreover, it was pointed out, should not be regarded merely in terms of rate of breathing. Pulmonary ventilation is what really matters, and the depth of the breathing is therefore as vital as the rate. It is the volume of air breathed per minute that is the important quantity. In this connexion Prof. Henderson dwelt on the great work done by Prof. J. S. Haldane, who has explained the significance and relations of the volume of air breathed. Carbon dioxide, he showed, is the normal stimulant and regulator of breathing. The supply of oxygen has relatively little influence on respiration, and the administration of this gas alone never acts as a respiratory stimulant. This stimulating effect of carbon dioxide on the respiratory centre is put to practical use in the methods recommended by Prof. Henderson for securing rapid induction of anæsthesia. Another factor of the method is that the ether used is fully vaporised before it is administered. Rebreathing is employed because more uniform concentration of the vapour can be thus attained than in any other way. The condition of surgical anæsthesia depends on nothing else but the concentration of the anæsthetic in the central nervous system. The degree of saturation of the rest of the body has no direct influence on anæsthesia. The concentration of ether in the brain is immediately determined by that in the lungs and in the blood. The anæsthetic tension of ether in the blood is 3·7 to 4 per cent. of an atmosphere, which comes to about 1·2 g. of ether per litre of blood. The anæsthetic concentration is probably the same for everyone, even the most alcoholic. The reactions prior to anæsthesia are the real variables as between different patients, not the concentration at the point of full anæsthesia. The practical problem, then, is how ether can be volatilised and the vapour passed into the lungs rapidly enough to raise the concentration in the arterial blood immediately to the full anæsthetic amount. This could only be achieved with normal breathing if the concentration of the ether vapour inhaled were extremely high. This method has indeed been employed, but is undesirable for one reason, because of the irritating effect on the lungs of these highly concentrated vapours. The problem resolves itself into this: how can 6 or 8 g. a minute of ether be introduced into the pulmonary blood, or how can 9 or 12 g. of ether per minute be introduced as vapour into the inspired air without increasing the concentration of ether in this air to more than about 5 or 6 per cent. ? Obviously to introduce a large amount at a low concentration only one way is possible—by a large volume of breathing. This is achieved by stimulating respiration, by means of carbon dioxide, up to several times the ordinary resting volume, and then running in a sufficient concentration of fully vaporised ether to produce the concentration of ether in the blood necessary for full anæsthesia. Prof. Henderson pointed out also the value of carbon dioxide administration in cases of alcoholic poisoning, of drowning, and during the recovery period of anæsthesia. He claims it for an absolutely demonstrated fact that inhalation of air or oxygen to which a considerable percentage of carbon dioxide has been added is of very great benefit alike after a prolonged anæsthesia and after asphyxiation.

THE HOSPITAL SAVING ASSOCIATION.

IT cannot often have happened that any novel organisation, whatever its purpose, has progressed with the rapidity of the Hospital Saving Association which held its third annual meeting last week. The figures of its growth are, indeed, remarkable. In July, 1923, it had 15,000 members; by January, 1924, the numbers had grown to 25,000; by January of the present year they had swollen to 101,000; July saw 160,000, and there are now more than 200,000. A year ago the income of the Association was under £40,000; it is now £120,000. These figures go far to justify Lord Hambleden's forecast at last week's meeting that the membership will in time reach a million. The material for expansion is almost unlimited. Persons whose incomes are within "hospital limits" increase yearly in number, and there are, no doubt, still eligible many who have not yet joined the Association. For 3*d.* a week, some portion of which is often paid by the employer—the London Midland and Scottish Railway Company, for instance, contribute one-third—a man may ensure hospital treatment for himself and his family without loss of self-respect and with complete freedom from almoner's inquiries into means. Where so much can be obtained for so little it is not surprising that the movement should have achieved such rapid and substantial success. Nor are the benefits one-sided. Like the quality of mercy, these small payments are twice blessed, for if they give a remarkably cheap insurance on the one hand, on the other they provide the hospitals with large sums which they would otherwise almost entirely lack. During the past year the hospitals have received £65,000 from these weekly pence, a substantial proportion of which has been paid for extra benefits. Thus, while the contributor learns a little lesson in thrift he is rewarded with the best and fullest treatment that the modern hospital can provide. The fear that these easy terms would attract to the hospitals, to the detriment of the general practitioner, cases which would otherwise not have been treated there has been falsified, and may apparently now be dismissed. Mr. E. W. Morris's optimistic statement that the Association has "saved the hospitals" is, perhaps, a trifle premature, but it is well on its way to the achievement of the object for which it was created. This and other forms of contributory schemes are not only placing hospitals generally on a sound financial basis, helping to make possible the inevitable and costly developments of the near future, and giving the quietus to hasty talk about State interference, but inculcating valuable lessons of thrift, self-help, and independence among the mass of the people.

THE COLLEGE OF SURGEONS AND ITS MEMBERS.

The Council of the Royal College of Surgeons of England is again considering the claim of Members of the College to representation on its Council. A few days ago the Council received a small delegation introduced by Dr. Redmond Roche, President of the Society of Members, who set out the story of the long unrequited desire of the Members to have a share in the government of a corporation in which they were numerically so preponderant. Ever since the charter of 1843 which instituted "a new class of Members who were to be called Fellows," on whom devolved the government of the College, there has been almost continuous protest by the remainder against this exclusion. In 1887 the Association of Members presented to the Privy Council a petition signed by 4660 Members, believed to be half the number which could then be reached by post, and in 1896 a half-yearly meeting of Fellows of the College passed a resolution admitting the desirability of giving Members direct representation on the Council. At every annual meeting for the last 31 years the Society of Members has urged this concession upon the President, and at the recent meeting, which we briefly reported, a motion to that effect was moved by Dr. L. Haden Guest, M.P., and seconded by Mr. F. Lawson Dodd, L.D.S., both Members of the College, in speeches which dealt with broad principles of democratic government. Dr. Guest spoke of the vast new store of knowledge and capacity available to the College which might be opened up by linking the general body of Members with the work of the institution, and Mr. Dodd spoke of the greater authority, the wider sanction, and the greater influence in the eyes of the public which the College would gain thereby. It was, he thought, refreshing in these days to have children coming forward and wanting closer union with their parents. No criticism was made by the Members' representatives of the conduct of the Council as at present elected and administered by Fellows of the College, for the charter of 1843, which excluded a large class from governing, removed the existing abuses of government. The number of the Council was then increased to 24, of whom three should retire annually, the choice of examiners was no longer restricted to councillors themselves, and any councillor became eligible for presidency or vice-presidency. The Council of the College as so constituted now carries out a triple function of developing the Hunterian Museum, of maintaining a valuable library, and of examining candidates in surgery. Other functions are less well defined. Section XV. of the College by-laws states that the Council will at all times protect and defend its Fellows and Members who may be disturbed in the exercise and enjoyment of their rights; and Section XIV., relating to the admission of Members, includes a declaration by them to obey every lawful summons issued by the Council and to maintain the dignity and welfare of the College. It may be that with the growth of wider professional associations and the institution of a disciplinary medical council the medico-political work of the College of Surgeons was likely to be dropped. In any case, since the conjoint method of examination was initiated in 1875, any political action might have to be taken with the coöperation of the sister College. It may also be contended that the term "Member" does not now entail more or other obligations than that of "Licentiate" of other medical corporations. But there is no reason to doubt that a body of Members is desirous of taking part in the corporate life of the College, and that this desire is to be considered on its merits by the Council. There may be other and larger issues than those which have appeared in the fitful light of controversy.

CENTENARY OF BIRMINGHAM MEDICAL SCHOOL.

The centenary of the Medical School of Birmingham University will be celebrated on Dec. 8th, when it is proposed to confer honorary degrees on Mr. Neville Chamberlain, Minister of Health; Sir Donald MacAlister; Sir Humphry Rolleston; and on Mr. Priestley Smith, the doyen of the medical profession in Birmingham. The first records of any teaching in medicine in Birmingham go back to 1768, when Mr. John Tomlinson, surgeon to the Town Infirmary, held a course of anatomical lectures during the winter season for the medical students apprenticed to medical practitioners in the town. Tomlinson was the first provincial surgeon to give regular anatomical lectures, and his name should be handed down to posterity on that account. The General Hospital was founded in 1779 by Dr. John Ash, who became one of its first four physicians, the other three being Dr. Smith, Dr. Withering, the introducer of digitalis into practical medicine, and Dr. Edward Johnstone, who died in 1851 at the age of 94. The seed of the modern flourishing and important school was planted on Dec. 1st, 1825, when William Sands Cox, then 24 years of age, delivered the first of a series of anatomical lectures. Clinical lectures had been delivered long before this in Birmingham, but Cox introduced the systematic instruction of medical students at No. 24, Temple-row. Cox had studied himself at the General Hospital, and after being articled to his father had continued his studies in London at Guy's and St. Thomas's Hospitals, obtaining the M.R.C.S. in 1824. He then went to France, where he studied under Laënnec, Lisfranc, and Cuvier, and where he met Quain, the anatomist. On his return to Birmingham Cox urged the formation there of a school of medicine, and in 1828 the senior members of the local medical profession decided to follow the lead given by Manchester and Leeds. In spite of much opposition the school was fairly started by 1834, when 90 students were enrolled. Two years later King William IV. accepted the position of patron and conferred upon the school the title of the Birmingham Royal School of Medicine and Surgery. In 1843 a charter granted by Queen Victoria resulted in the renaming of the school as Queen's College. When Cox retired in 1865 the College was still heavily in debt and its future uncertain, but three years later it joined forces with the Sydenham College connected with the General Hospital. Later, after the foundation of Mason Science College, some of the preliminary medical training was transferred there, and in 1892 the medical faculty of Queen's College became the Queen's Faculty of Medicine to Mason College. The final step was the incorporation in 1897 of Mason College as a University College, the charter conferring University status being granted three years later. During the present century the growth of the medical faculty has continued unchecked, a flourishing dental school has arisen, and the outstanding event has been the opening of the new buildings at Edgbaston by

King Edward VII. in 1909. A short history of the School, compiled by the medical faculty and the Birmingham Medical Institute will be published [1] on the day of celebration.

THE PSYCHO-PHYSICAL BORDERLAND.

NOT so long ago there was a curious borderland between psychology and physiology which was apt to be the despair of the psychologist and the derision of the physiologist. The convinced experimentalist looked rather askance at inquiries which on the one hand were hardly objective and on the other seemed little different from his own field in the brain and special senses. But, as Sir Charles Sherrington pointed out in his anniversary address to the Royal Society on Nov. 30th, there has lately been a divergence and separation of interests and methods which is likely to make for progress on both sides. Psychology is more sure that it is really possible to investigate fruitfully the workings of the mind by means of the mind, and is more content to leave the synonymy of brain and mind for the time being in the air. Physiologists at the same time have been pursuing the analysis of the behaviour of the higher animals in terms of physiology and without any reference to the psychical factors which are involved, and they have made much progress in interpreting behaviour in terms of the principles of reflex action. Pre-eminent in this advance in natural knowledge are Pavlov and Magnus. Prof. Magnus, Croonian lecturer to the Royal Society this year, shows, for example, that a cat without cerebral hemispheres will respond to the stimulus of seeing a mouse by putting itself in the completely appropriate posture to leap in the right direction on to the mouse. The reaction is a complicated postural reflex similar in precise purposiveness to that by which a cat achieves "rightside-upness" when it is thrown out of the window. It brings the animal up to the point where it has to decide whether it will jump at the mouse or not; this it cannot do without more brain than it has. Prof. Pavlov and his pupils have taken up the problem at this stage as an act of behaviour, and in their study of conditioned reflexes have shown that the final outcome is the sum of impelling and restraining impulses which are determined partly by the circumstances of the moment—and especially by their time relations—and partly by the circumstances under which the act has been elicited in the past. This line of inquiry comes very near psychology, but it is pursued with a strict avoidance of all reference to psychical reactions. Indeed, it leads to a group of facts which is obviously common ground to psychologists and physiologists, and that they now approach this meeting point each from their own side and each with their own axioms and fundamentals is plainly a gain from which much may be hoped for. Both parties can now look on the insoluble riddle of the relation of brain and mind as their possible goal rather than as the point from which each must start out; to look for what you cannot see is more hopeful than to start from an unknown place.

WE regret to announce that Sir John MacAlister, for 38 years secretary of the Royal Society of Medicine, died at his home in London on Dec. 1st. A memorial service will be held at St. Peter's Church, Henrietta-street, Cavendish-square, on Saturday, Dec. 5th, at 1 P.M., to be followed by a private cremation at Golders Green. The House of the Royal Society of Medicine will be closed on that day from 12.30 to 2.30 P.M.

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[1] Birmingham: Cornish Brothers. 2*s*. 6*d*.

A KINDLY THANK-OFFERING.—The patients, friends and neighbours of the late Dr. W. R. Kirkness, of Pembury, Tunbridge Wells, who died on Sept. 19th, have subscribed the sum of £330 as a very small appreciation during the past six years, and in memory of his self-sacrificing devotion to duty.

Modern Technique in Treatment.

A Series of Special Articles, contributed by invitation, on the Treatment of Medical and Surgical Conditions.

CL.

THE TREATMENT OF RUPTURED MUSCLES AND TENDONS.

A MUSCLE or its tendon may become lacerated either subcutaneously or as part of an open wound. The following remarks are confined to subcutaneous rupture.

A muscle is usually torn as the result of a sudden and almost involuntary contraction, and the tearing may be partial or complete. The most common site is the junction of the tendon with the fleshy fibres, but the tendon itself may snap or be separated from its attachment, sometimes carrying with it a fragment of bone. A common symptom is sudden pain as though the limb were struck with a cane; the snapping of the tendon may be heard at the same time. But frequently the only symptom noticed is the weakness of the limb. The muscles or tendons most often ruptured are the tendo Achillis, ligamentum patellæ, quadriceps extensor, plantaris, adductor longus, biceps cubiti, and extensor tendons of fingers. These, too, are the muscles most frequently involved in the injuries of athletes.

Rupture of the Tendo Achillis.

The heel tendon is the most frequent to rupture. The injury occurs when the tendon is subjected to any sudden or forcible strain, of which dancing is a traditional example. A gap can be felt between the divided ends, but by bringing the foot into the attitude of equinus the interval is lessened and good union always takes place under proper treatment. I know of no instance during the last 12 years at the Royal National Orthopædic Hospital, where tenotomies are very frequently performed, where union failed after tenotomy of the tendo Achillis for congenital talipes—and this in spite of the fact that the tendency is deliberately to increase rather than diminish the gap after section. In treating this condition there is no need to make the patient lie up. All that is necessary is to raise the heel of the boot by adding half an inch of leather and to prevent movement at the ankle. This is accomplished by attaching a rigid metal rod to the heel of the boot and running it up behind the leg to terminate in a padded leather calf band which buckles to encircle the limb just below the knee. The patient will quickly accommodate himself to this appliance and walk with the limb rotated outwards. To keep the ankle quiet in bed at night a splint should be worn with foot and calf pieces so arranged as to keep the foot in slight equinus. Daily massage of the calf muscles with the foot grasped and held in the equinus attitude will help recovery and maintain muscle tone.

Another simple and efficient method is that devised by Lynn-Thomas through personal experience of the injury. A flattened strip of aluminium is moulded to the dorsum of the foot and front of the ankle and leg. It is then encased in a thick indiarubber tube and is worn between the tongue of the boot and the lacing, the lower strands of the boot-lace being made to encircle the splint to avoid undue pressure. The metal and rubber do not extend upwards much beyond the boot. The appliance may be discarded at the end of six weeks; by then the ends of the tendon will be united by strong white fibrous tissue.

If the tendon has parted from its insertion and taken with it a fragment of bone it is best to cut down and explore, and replace the fragment either by bone-pegging or suturing with kangaroo tendon. The appliance described above should be worn after about 14 days until bony union is established.

Ligamentum Patellæ.

This tendon is usually torn in a strong effort to avoid falling backwards. It may break in the middle or at either end, in which case it is not uncommon for a piece of bone to be detached at the same time. The rupture is more often complete and the patella is retracted well upwards. In partial rupture the patient should be kept off his feet for a fortnight or longer, according to the severity of the injury, with the knee extended on a splint. A pad should be applied above the knee and bandaged so as to keep the patella pushed downwards. The extensor cruris group of muscles should be massaged daily, for they incline to waste rapidly in any serious injury about the knee-joint. In complete rupture the best treatment is to operate. The same precautions are necessary as when the knee-joint is explored. The joint capsule will be found torn and will require suturing. The tendon should be repaired with strong catgut. If a tibial or patellar fragment has been avulsed it should be reattached by wire or kangaroo tendon. For three weeks after the operation the limb is kept on a bed calliper with a knee-cap and a pad to keep the patella pushed downwards. When the patient is about to get up it is a wise precaution to have his bed calliper converted into a walking calliper, which he should wear for another fortnight or so. Daily massage should be given during the whole time, and when he begins to get up—i.e., three weeks after the operation—active and passive movements of the knee are commenced.

Quadriceps Extensor Tendon.

This muscle is torn in much the same way as the patellar ligament. Owing to the attachments of the expansions of the vasti to the patella and tibia, it is unusual to find a wide separation of the ends. The treatment is the same as for the patellar ligament —i.e., explore and suture the divided ends after removing blood from the joint and closing the capsule. The after-treatment is also the same. In the elderly, or where for some reason the operation is ill-advised, a good result may still be obtained by wearing the bed calliper with knee-cap and pad for six weeks or so, and then, when up and about, a walking calliper for a further period of six to eight weeks.

Plantaris (" *Lawn-tennis Leg* ").

What is commonly called " lawn-tennis leg " has been variously attributed to laceration of one or more of the following structures: the plantaris, soleus, inner head of gastrocnemius, aponeurosis, and deep plexus of veins. Therefore at best the diagnosis is speculative. The most typical symptom is a sensation of being struck by a stone on the calf, followed by weakness of the leg. The limb swells, and sooner or later there is a patch of discoloration due to extravasation of blood. On palpation a gap may be felt in the aponeurosis of the leg with distinct local tenderness. The limb should be treated by raising it for a few minutes to allow the veins to empty as much as possible. Brown holland strapping is then applied in overlapping strips of about an inch and a half wide, extending from just above the ankle to the upper part of the calf. The plaster bands should not encircle the limb completely; there should be an inch gap in front. The patient should then be told to walk freely. He may hesitate in bringing his heels down, but he should be encouraged to do this and to walk with a full step. The strapping will be loose in three or four days and should be then reapplied. The plaster is renewed at intervals up to a fortnight or longer until the patient has recovered sufficient confidence to dispense with it.

The essential points in the treatment are the splinting of the lacerated tissue by the plaster and the patient's own active movements. Massage is unnecessary.

Adductor Longus (" *Rider's Strain* ").

Rupture of the adductor muscles of the thigh is an injury to which hunting men are liable. It is produced by the sudden grip of the saddle when taking a fence or in controlling a restive animal. A hæmatoma of varying size develops and underneath a gap can be felt in the muscle; there is frequently pain and discomfort which may extend to the perineum, and in a day or two there is considerable discoloration. The treatment should first be directed towards dispersing the swelling and relieving the pain. This is best done by gently massaging the area from below upwards. A pad of wool is then placed over the seat of the injury and pressure maintained by a bandage applied in spica fashion. The massage is kept up for three or four days, and then the limb is strapped and the patient encouraged to move about.

The rest of the treatment resembles that of " lawn-tennis leg." Quiet riding may be resumed in a fortnight.

Biceps Cubiti.

The biceps is torn more frequently than any other muscle in the upper limb. The rupture occurs during violent contraction in either the short or the long head or in the belly. Of three cases in my experience, one occurred whilst coal-mining, another during a climb in the Alps, and the third when carrying a load. This last case was characteristic. Two soldiers were carrying a plank when one of them accidentally dropped his end, and the other, suddenly lurching forward, felt something give way in the arm. All three patients complained of weakness in flexing the forearm. There is no difficulty about the diagnosis; on contracting the arm a prominent lump forms in front in striking contrast to the other limb; where only one head is torn this is retracted, leaving a groove where the tendon sheath only may be palpated, with the undamaged head running alongside.

Owing to the great tendency to retraction, massage is of little avail; the only satisfactory treatment is to operate and suture the torn muscle. Of the three cases cited two refused operation and no improvement resulted. The third had the muscle exposed and the inner head was found ruptured with the lower end coiled up. The sheath was intact for its greater part. The upper end of the tendon was pulled down inside its sheath and the two ends united by catgut. The arm was nursed in the flexed position on a splint for ten days, when massage and passive movement were commenced and the splint retained for another ten days. After that the patient was allowed gradually to use the arm and recovered completely.

Extensor Tendons of Fingers (" *Mallet Finger* ").

The finger extensor tendon is frequently torn by a blow on the end of the digit. This occurs in the cricket field and amongst housewives when making up beds. The terminal phalanx drops with inability to extend it. The tendon is often only partially torn or the fibrils frayed. The best treatment is to splint the finger for three or four weeks according to the severity of the injury. A duralumin splint half an inch wide and extending from the finger-tip to the head of the metacarpal is applied with strapping and padded with wool. An extra small pad of wool is applied between the splint and the tip of the finger to promote slight hyperextension of the terminal phalanx. This splint is worn for ten days and then a shorter splint reaching to the web of the fingers is applied. When the splint is left off the finger is massaged and active movements commenced gradually and increased until full voluntary extension is possible.

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Special Articles.

GENERAL MEDICAL COUNCIL.

Dental Examinations.

At the session of the General Medical Council held last May it was decided that certain resolutions of the council on dental examinations should be forwarded to the various licensing bodies, who should be asked to comment upon them. On Nov. 24th the Dental Education and Examination Committee of the Council presented its observations on the replies received. One of the recommendations of the Council was "that, where possible, candidates should be tested in the mode of administration of general anæsthetics in common use in dental practice and should be required to perform extractions." It was reported that in the final examination the University of Birmingham has no practical tests in the administration of anæsthetics and that the Universities of Liverpool and Manchester do not require candidates to perform extractions. At the Royal College of Surgeons of England a certain number of candidates is always called upon to extract teeth under anæsthetics in the final examination, but this test is only applied to a small proportion of the whole number examined. The Council of the Royal College of Surgeons of England strongly disapproves of candidates under examination being called upon to administer anæsthetics to patients. Having considered the answers received the Dental Education and Examination Committee recorded its opinion that—

> The test of performing extractions in the final examination for a dental qualification is as important as the other practical tests required by all the licensing bodies; and that, when circumstances permit, it would greatly add to the efficiency of the examination if candidates were tested in the administration of anæsthetics in common use in dental practice, carried out under the personal supervision of the examiners. If the anæsthetics be administered by a skilled anæsthetist the candidate should be questioned on the mode of administration, and the possible dangers which may arise therefrom.

A regulation making it obligatory to pass all the dental subjects of the final examination at one time is apparently enforced by all the licensing bodies except Manchester University; whilst the recommendation that candidates remitted in any subject of a professional examination should, before being readmitted to examination therein, produce evidence of further study in this subject, is not carried into effect at Queen's University, Belfast. The Royal Faculty of Glasgow suggests that this further course of study should be asked only of those who obtain less than 40 per cent. of the available marks. The Council decided that the application of the regulation should not entail a period of remission of more than six months, and directed that the attention of licensing bodies should again be drawn to its resolutions and to the observations on them contained in the Dental Education and Examination Committee's report.

The Dentists Register.

A communication was read stating that the Dental Board had considered the case of John Begg, which had been referred back by the Council for further inquiry, and had not found that his name ought to be erased from the Register. A report was also received from the Board concerning Thomas McGowan, registered as of 26, Whalley New-road, Blackburn, who was convicted of a felony at the Liverpool Assizes on Oct. 30th, 1925, and sentenced to 12 months' imprisonment. The solicitor to the Board presented the facts to the Council, which deliberated in camera and directed that Mr. McGowan's name should be removed from the Register.

The President then announced that the Registrar to the Dental Board had been directed to restore to the Register the names of Stuart Christopher Nicol and James Edward Smyth.

The Medical Register.

The Case of Alexander Dawson Reid.—This case was adjourned from Nov. 27th, 1924, when Mr. A. D. Reid, registered as c/o R. Crosbie, Barclays Bank, High-street South, London, E. 6, appeared before the Council on account of convictions for drunkenness. The charges against him were then proved to the satisfaction of the Council, but in consideration of evidence that he was suffering under physical disabilities and of an assurance from Mr. Reid that he would henceforward refrain from alcohol, the Council postponed its decision for 12 months. Testimonials as to sobriety during this period were received, and Mr. Hempson, solicitor, who appeared on behalf of the Medical Defence Union, stated that Mr. Reid had kept his promise to abstain from drink. After deliberation in camera, the President announced that the Council had not seen fit to direct that Mr. Reid's name should be erased from the Register.

The Case of John Evans.—On Nov. 26th, 1924, Mr. Evans, registered as of 6, High-street, Yiewsley, Middlesex, appeared before the Council on a charge of having issued 79 medical certificates required for National Health Insurance purposes during the period Sept. 5th, 1922, to March 11th, 1924, without having seen the insured person to whom they referred at any time between these dates. The Council at that time postponed judgment for 12 months. Letters from practitioners testifying to the good conduct of Mr. Evans during the interval having been produced, the Council considered the case in camera and the President announced its decision as follows—

> "Mr. Evans: As I warned you a year ago, the Council takes a very grave view of any laxity on the part of a registered medical practitioner in giving Certificates, a privilege which is entrusted to him by the State in the belief that he will exercise it honourably; but, having had good reports of your conduct since November last, the Council are now satisfied that you will be more careful in the future and do not see fit to direct the Registrar to erase your name from the Medical Register."

The Case of Alexander Duguid.—The Council then considered the case of A. Duguid, registered as of 20, Meadow-road, Leeds, M.B., Ch.B. Aberd., who appeared on the following charge:—

> "That, being a registered medical practitioner and a lieutenant in the Royal Army Medical Corps, you were tried by a Field General Court Martial, held overseas on July 14th, 1917, on the following charge, viz.: when on active service drunkenness, in that you, at Mikesse on June 30th, 1917, having been warned for the duty of accompanying patients to Morogoro, were drunk, of which charge you were found guilty, and sentenced to be dismissed from His Majesty's Service; and that in relation thereto you have been guilty of infamous conduct in a professional respect; and that you were at the Leeds City Police Court convicted of the following misdemeanours viz.: On May 2nd, 1922, of disorderly behaviour while drunk, for which you were fined 10*s*. or seven days' imprisonment; on April 24th, 1925, of being found drunk and incapable, for which you were fined 10*s*. or seven days' imprisonment."

Mr. Duguid was accompanied by Mr. O. Hempson, solicitor, who was instructed by the Medical Defence Union. Mr. Hempson objected to the two offences of which his client had been convicted at the Leeds City police court, being classed as misdemeanours under Section 29 of the Medical Act, 1858. A misdemeanour, he argued, is an offence, less than a felony, which is the subject of indictment. The offences in question had been the subject of summary jurisdiction, and therefore should not be regarded as misdemeanours. The Council could only deal with them, he considered, under the heading of "infamous conduct" and not under that of "convictions." The Council's solicitor quoted authority to the effect that any crime less than a felony is a misdemeanour, whether indictable or not, and the President, on the advice of the Council's legal assessor, overruled Mr. Hempson's objection.

In the course of examination Mr. Duguid stated that on June 30th, 1917, he was off duty; he had transferred the care of his patients to a relieving officer and he had not been warned for duty as alleged. On May 2nd, 1922, he was one of a wedding party at a railway station, and although he had "had a drink" he was by no means drunk. He was taken to the police station and pleaded guilty to the charge in order that the incident might be closed as soon as possible; but he had resolved to abjure alcohol and had been a total abstainer ever since. The conviction on April 24th, 1925, was, he stated, the result of an error. On the previous night he had taken large doses of dial—8 or 10 tablets—for insomnia, and this had made him unwell. In the morning he called in a fellow practitioner, who advised him to stay indoors for 48 hours; but this advice he disregarded. He went out, was overtaken by faintness, entered a cab, and was driven to the police station. Neither on this nor on the previous occasion was he examined by a police doctor. Mr. Hempson produced letters of testimonials to Mr. Duguid's character, and the Council deliberated in camera. The President then announced that the charge and convictions had been proved to the Council's satisfaction; nevertheless, in view of the evidence submitted, the Council had not seen fit to direct that Mr. Duguid's name should be erased from the Register.

The Case of Charles Bertrand Wagstaff.—Mr. C. B. Wagstaff, registered as c/o National Provincial Bank, 50, Cornhill, London, E.C. 3, M.R.C.S. Eng., L.R.C.P. Lond., was charged with having abused his position as a medical practitioner by committing adultery with a married woman, with whom and whose family he stood in professional relationship, of which adultery he was found guilty by a decree of the High Court of Justice, dated June 11th, 1925. Mr. Wagstaff did not appear in answer to his notice, but wrote saying that he denied that adultery took place, but realised that it would be impossible to prove the contrary to the Council. Evidence of Mr. Wagstaff's attendance in a professional capacity on the persons concerned having been put forward, the Council considered the case in camera and the President announced that the Registrar had been directed to remove his name from the Register.

The Case of George Joseph Mary Fraser.—Mr. Fraser, registered as of 36, Blenheim-crescent, London, W. 11, and having the Irish Conjoint qualification, appeared to answer the charge that he had been convicted on Oct. 21st, 1924, of failing to notify a case of tuberculosis and the birth of a child, and—

> "That, being a registered medical practitioner you, by your presence, countenance, advice, assistance, or coöperation, knowingly enabled an unqualified and unregistered person, viz., one Ulric Knyvett Hoff: (1) To attend, treat, or perform operations upon patients in respect of matters requiring professional discretion or skill, or otherwise to engage in professional practice as if the said person were duly qualified and registered; (2) to issue certificates, notifications, reports, or other documents of a kindred character in your name or on your behalf. That being a registered medical practitioner: (1) You signed a certificate of death on April 3rd, 1924, of one Mrs. Sarah Jenner, certifying that you attended her during her last illness, and that you last saw her alive on March 30th, 1924, whereas you had not attended or seen the said Sarah Jenner during her last illness at all; (2) you signed a certificate of death on Feb. 8th, 1925, of one Mrs. Amelia Wimmer Lembo, certifying that you had attended her during her last illness, and that you last saw her alive on Feb. 8th, 1925, whereas you had not attended or seen the said Amelia Wimmer Lembo during her last illness at all; (3) you signed a certificate of death on Feb. 12th, 1925, of one Mrs. Elizabeth Whiting, certifying that you attended her during her last illness, and that you last saw her alive on Feb. 12th, 1925, whereas you had not attended or seen the said Elizabeth Whiting during her last illness at all, which certificates were untrue, misleading, and improper; and that in relation thereto, you have been guilty of infamous conduct in a professional respect."

Mr. Charles Davis, solicitor, of the firm of Bulcraig and Davis, conducted Mr. Fraser's defence, and the hearing, which began on Tuesday, did not end till Thursday, Nov. 26th. In brief, Mr. Fraser's answer to the charge was that he never had any reason to doubt that Hoff was a qualified and registered practitioner until Feb. 8th, 1925, when Hoff informed him that he was not on the Register. He denied that the certificate of the death of Mrs. Sarah Jenner given on April 3rd, 1924, was in any way inaccurate; but admitted that, under the stress of circumstances, he gave the two other death certificates without having attended the patients as stated. He did not know that Hoff was unqualified until March 31st, 1925, some time after they had parted company.

Mr. Fraser's statements were to the following effect. In 1911, about the time of his qualification in Dublin, he was introduced to Hoff by a member of the honorary staff of his hospital. Hoff stated that he had a medical degree of Calcutta University and invited Mr. Fraser to act as his assistant and locum tenens on a tea plantation in Bengal of which he was medical officer. Mr. Fraser served in India in this capacity for more than a year and then returned to start a practice in Mile End-road, London, which he later left to serve in the war. In 1918 he received a call from Hoff, who acted as his assistant for a time. In January, 1924, he bought a practice in Kensington and on meeting Hoff in Southampton-row in a destitute condition invited him to act as locum tenens. Mr. Fraser was at times crippled by sciatica and the arrangement seemed satisfactory. Hoff had been acting as house physician at Doncaster and Hartlepool Infirmaries and elsewhere, and produced brilliant testimonials from a large number of doctors all over the country to whom he had acted as locum tenens or assistant. It never occurred to Mr. Fraser to question his qualifications or registration, and he engaged him at eight guineas a week. Later the remuneration was reduced to four guineas without night work. Hoff proved thoroughly competent, and the word registration was never mentioned between them until Feb. 8th, 1925, when Hoff suddenly appeared and asked Mr. Fraser to come and see Mrs. Lembo, whom he was attending, and who was dying. Dr. J. S. Goodall had been called in as a consultant. Hoff now admitted that he was not, in fact, registered though he was qualified for registration. (It was later discovered that he had taken a part of his examination for the licence of the Apothecaries' Hall, Dublin, and that whilst employed during the war at the institutions mentioned he had been granted by the Registrar-General a temporary privilege of signing death certificates for patients dying in these places.) Mr. Fraser and Hoff hastened to Mrs. Lembo's house, only to find the patient dead. It seemed impossible to ask Dr. Goodall for a certificate in case his suspicions should be aroused. Mr. Fraser was ill at the time. He thought it best to sign the certificate himself, pending Hoff's registration, and, having done so, he returned to his nursing-home. Four days later Mrs. Whiting died whilst under Hoff's care. Mr. Fraser again thought that the only possible course was to give a certificate himself. These two certificates were, he stated, his only lapses. On Saturday, March 14th, 1925, Mr. James Fenton, M.B., medical officer of health for the Borough of Kensington, had reason to make inquiries about a case of alleged scarlet fever said to be under Mr. Fraser's care. He called at the house, but was told that Mr. Fraser was in a nursing-home and that Hoff was acting for him. Hoff was out, but it occurred to Mr. Fenton to look up his name in the Medical Directory. On finding that it did not appear he rang up Hoff and told him of the omission. Mr. Fraser said that on returning home that day (Saturday) he heard of the incident and insisted that Hoff should accompany him to see Mr. Fenton on the following Monday morning. Mr. Fenton was then told that Hoff was not on the Register (although entitled so to be) and from March 14th onwards, said Mr. Fraser, Hoff and he had nothing to do with one another except in connexion with debts and defalcations which Hoff had incurred in the practice.

In support of Mr. Fraser's case evidence was brought of the respect in which he and Hoff were held by their patients, and Mrs. Eileen Fraser testified to the circumstances under which her husband visited Mrs. Jenner on March 30th, 1924. In support of the charge the Council's solicitor called the daughter of the late Mrs. Jenner, who denied emphatically that it was possible for Mr. Fraser to have called on the deceased on March 30th, 1924, without her cognisance. Cross-examined, Mr. Fraser admitted that he had not examined the patient or recommended treatment and was uncertain as to who let him into the house. It was stated that no record of the visit had been made. The Council's solicitor then drew attention to an incompatibility in the statements of the defence. He quoted a declaration made by Mr. Fraser at Scotland Yard to the effect that when Hoff visited him in Mile End-road in 1918 he knew that Hoff was not registered, and also drew attention to a letter sent to the Council on Mr. Fraser's behalf by his solicitor in June last in which it was stated that Mr. Fraser was aware of this fact in 1922. In reply to cross-examination on these points Mr. Fraser said that both statements were incorrect. The first was made under the influence of nervousness, and the second was a result of confusion of dates.

At the conclusion of the hearing the Council deliberated on the case in camera, and the President announced that the charges had been proved to the Council's satisfaction and that the Registrar had been directed to erase Mr. Fraser's name from the Register.

The Case of Andrew George Tottenham Hanks.—Mr. Hanks, who is registered as of Edith-grove, Chelsea, London, S.W., and holding the Irish Conjoint qualification, appeared upon a charge of having been convicted of drunkenness on several occasions. He was not charged with infamous conduct in a professional respect. Mr. Hempson, instructed by the Medical Defence Union, appeared on Mr. Hanks's behalf and formally objected, as on a previous occasion, to the charges being brought under the part of the Medical Act, 1858, which relates to convictions for misdemeanours. His objection was overrruled. It was stated that at the age of 51 Mr. Hanks had served in France as a Territorial and had been invalided home, since when he had been in poor health. In January, 1922, he had fallen from his horse and injured his head, and the illness and accident had made him very susceptible to alcohol. Since July last, however, he had been a total abstainer. Letters were read from doctors and others stating that before his health was damaged Mr. Hanks was an abstemious man, and testifying to his high character, and after the Council had considered the case in camera the President announced that judgment would be postponed until May next in order that evidence might be produced of satisfactory conduct in the intervening period.

The Case of Algernon Randolph Upton.—Mr. Upton, registered as of Medina Villas, Hove, M.R.C.S. Eng., L.R.C.P. Lond., appeared before the Council on the charge—

> "That, being a registered medical practitioner and whilst acting as locum tenens for Theodore Charles Pocock, a registered medical practitioner, and subsequently thereto, you sought to attract to yourself patients and to promote your own professional advantage: (1) By inviting panel patients of the said Theodore Charles Pocock to become panel patients of yours; (2) by filling in your name on the medical cards of panel patients of the said Theodore Charles Pocock, without being authorised so to do, in order to have them transferred to your panel; and that in relation to the facts so alleged you have been guilty of infamous conduct in a professional respect."

Mr. F. W. Gentle appeared as counsel for Mr. Upton, instructed by Mr. F. W. A. Cushman, solicitor, whilst the complainant, Mr. T. C. Pocock, M.B., was represented by Mr. Ray Neve, his counsel, instructed by Messrs. Dell and Loader, his solicitors.

In the spring of 1924 Mr. Pocock was compelled to enter a sanatorium, and it was suggested to him that he should retain Mr. Upton, the son of a neighbouring practitioner, as his locum tenens. Without making any special inquiries he fell in with the suggestion; there was no agreement that Mr. Upton should not later enter practice in the neighbourhood if he wished. At this time Mr. Upton was not on the panel, and in order to regularise the position an arrangement was made in October, 1924, that his name should appear as that of Mr. Pocock's deputy. The engagement ended on April 29th, 1925, when Mr. Pocock came back to his practice and the two parted on good terms. Later, however, Mr. Pocock received a list of the names of 73 patients who had removed their names from his panel and on making inquiries discovered—so he alleged to the Council—that Mr. Upton had been asking some of his patients whether they would like their names transferred to his panel, and that the doctor's name on the patient's card had in two cases at least been changed without the patient's consent. In support of these charges a number of witnesses was called. Several members of a family named Boone stated that Mr. Upton had been called in to see a child at their house and had told them, without being questioned, that he was going to start practice in the town and "that he already had a good few patients of Dr. Pocock's and would be glad to have the Boones on his list if they felt like making a change." One member of the family present at the time was unable to confirm the details of this conversation and said that she could not be certain whether she had heard this remark. Other witnesses stated that they had been invited to change to Mr. Upton's panel, and evidence was also tendered by a man who said that he had left his card at the surgery and had received in its stead a new card bearing Mr. Upton's name, although he had never authorised any such change. In the course of cross-examination Mr. Pocock said that he had been a candidate for municipal election, and whilst admitting that he might have offered the literature of his party to patients who came to see him, denied emphatically that he had ever allowed bottles of medicine to go out from his dispensary with the words "Vote for Pocock" written on them, and disagreed with the suggestion that a considerable number of patients had been alienated by his canvassing for his party. He was quite unaware, he said, that Mr. Upton had been in practice in Hove before acting as his substitute. Mr. Upton said that he had been a surgeon-lieutenant in the Navy and had served in the Indian Medical Service. After leaving India he had returned home and for two years had conducted a small private practice in Hove from his father's house. He denied absolutely the charges that had been made against him. He had never invited any patient of Mr. Pocock's to transfer to his panel, and the statements of the witnesses who asserted the contrary were not expressions of the truth, but of personal bias in favour of Mr. Pocock and against himself. The fact that cards had had the name of the doctor altered to his own was immaterial. Whether they were actually in the name of Pocock or of Upton, they were credited to Mr. Pocock, just the same, according to the arrangement by which he served as deputy on the panel for Mr. Pocock. He had started practice on May 1st, 1925, with only one panel patient of his own, who had transferred himself previously without any suggestion that he should do so.

At the close of the hearing on the following day, another witness tendered evidence on Mr. Upton's behalf and the Council considered the case in camera. The President then announced that the facts alleged against Mr. Upton had not been proved to the satisfaction of the Council.

The Case of Edward William Dacre Hardy.—Mr. Hardy, registered as of Durley-road, Bournemouth, M.R.C.S. Eng., L.R.C.P. Lond., appeared to answer a charge of having, between June 30th, 1924, and April 16th, 1925, sent 31 prescriptions for morphia tablets (to be supplied on three occasions) and morphia suppositories to a woman who had been his patient during May and June, but whom he never saw after June 24th, 1924; the giving of these prescriptions being an abuse of the privileges conferred on medical practitioners by the Dangerous Drugs Act.

Sir Travers Humphreys conducted the case on behalf of the Director of Public Prosecutions. He said that although the Home Office had no feeling against Mr. Hardy, whose record of practice was very creditable, it disapproved of his attitude towards what he had done. Mr. Hardy stated that the patient, Mrs. Coke, came under his care at Bournemouth in May, 1924. For the previous 16 years or so she had been suffering from cystitis and rectal pain and had become addicted to morphia, but under the care of a doctor the daily dose had been reduced to 2 gr. Mr. Hardy attempted to reduce the dose further, but this proved impossible, and when in June the patient said that she was going to London for about six weeks and was most anxious not to be transferred to another doctor, he agreed to send her prescriptions for this minimal quantity of the drug, thinking that the arrangement would prevent the patient taking her own measures to satisfy the craving. For the same reason he continued to send prescriptions, and as he often heard from Mrs. Coke did not realise that so long a time had passed since he had seen her. In February, 1925, she went to see Mr. G. E. Cope, to whom she gave Mr. Hardy's name as that of her medical attendant, and correspondence was exchanged. Mrs. Coke died on April 23rd, and at the inquest death was stated to be due to hydronephrosis and uræmic coma, accelerated by chronic morphia poisoning, together with local peritonitis and pneumonia. The coroner said that he hoped that Mr. Hardy was ashamed of himself, but Mr. Hardy replied: "No, Sir, I am not." He now realised, he said, that his action might have led to Mrs. Coke receiving the morphia ordered by him in addition to that prescribed by some other doctor, and that it was not a proper thing to have sent the prescriptions. Sir Travers Humphreys said that this was a very fair explanation. Dr. D. Hyla Greaves appeared as witness to Mr. Hardy's high character, and, amongst others, a testimonial was received from 35 members of the honorary staff of the Royal Victoria Hospital, Bournemouth, and another from the Bournemouth division of the British Medical Association, of which Mr. Hardy is chairman. After the case had been considered in camera the President said that the Council took a very grave view of any abuse of the privileges conferred upon medical practitioners under the Dangerous Drugs Acts, which involved a trust by the Government in the honour and good faith of the profession. The Council had already given notice that any contravention or any abuse of the privileges, whether it were criminal or not, constituted an offence of which the Council would take notice. The Council regarded the facts alleged against Mr. Hardy as proved, but, having regard to the warning he had received during the proceedings and to his assurance as to his conduct in such matters in the future, the Council trusted that his conduct in reference thereto would henceforth be beyond reproach. Accordingly it had not seen fit to direct the Registrar to remove Mr. Hardy's name from the Register.

The Case of William Lloyd.—On Saturday, Nov. 28th, the Council considered the case of Mr. Lloyd, registered as of Brook-street, London, W., L.S.A. Lond., L.R.C.P. and L.R.C.S. Edin., and L.F.P.S. Glasg., who appeared at the complaint of the British Medical Association on the following charge:—

> "That, being a registered medical practitioner, you sought to obtain patients and to promote your own professional advantage by means of an article published in the *Daily Mail* of June 5th, 1925, entitled 'Hay Fever—New Treatment—Specialist's Report—Patients Cured,' which was based upon materials supplied by you; and sought to obtain as patients certain persons who, after reading the article, had written to the *Daily Mail* for your name, and whose letters were forwarded to you by the *Daily Mail*, and to whom you wrote inviting appointments to be made for treatment, although they had not themselves communicated with you; and that in relation to the facts so alleged you have been guilty of infamous conduct in a professional respect."

Mr. W. E. Hempson appeared for the complainant and Mr. J. B. Melville was counsel for Mr. Lloyd, instructed by Messrs. Cooper, Bake and Co., solicitors. A number of members of the Council who are members of the British Medical Association took no part in the proceedings.

An article was read which appeared in the above-mentioned newspaper of June 5th, 1925, and purported to describe the remarkable results obtained by a London specialist in the treatment of hay fever. The article was written in a "popular" manner and contained derogatory references to common forms of treatment. These were given as coming from the specialist himself, as also were certain details of successful cases and of experiments proving that cured patients remained immune when exposed in hay-fields. Statutory declarations were made by three sufferers who had applied to the *Daily Mail* to know the name of the specialist. One of these said that in reply to his application he had received an undated typewritten letter from the news editor saying that he now had permission from the doctor referred to in the article to give his name to inquirers. Mr. Lloyd's name and address were appended. Later the witness had received a card, from Mr. Lloyd's address and signed by a secretary, stating that Mr. Lloyd would be pleased to see him by appointment and that his fees were four guineas and two guineas. A second witness had had an undated typewritten letter from the news editor saying that his letter of inquiry had been forwarded to the specialist mentioned in the article and had later also received an appointment card. One of the witnesses had communicated with the British Medical Association. On behalf of the Association Mr. Hempson said that in view of the large circulation enjoyed by the newspaper referred to it was hardly possible to imagine a more gigantic advertisement. The article read like the announcement of a quack. A letter from the manager of the legal department of the Associated Newspapers to the General Medical Council stated that Mr. Lloyd had made no objection to the article being written provided that his name was not mentioned and no indication of his identity divulged. The article had attracted considerable attention and a large correspondence, and many telephone calls had been received from readers. Unfortunately a subordinate member of the staff had communicated Mr. Lloyd's name to a limited number of inquirers and the writer of the article had asked Mr. Lloyd to see a few selected cases by appointment.

Mr. William Lloyd said that for some years he had been in consultant practice as a specialist in diseases of the throat, nose, and ear, and held various hospital appointments. He had a very large practice and enjoyed an income of many thousands a year. He had no possible motive for advertisement. On June 4th, 1925, he said, he had a visit from a journalist connected with the Associated Newspapers, who came as a sufferer from hay fever. During treatment he spoke of the work he was doing, and showed a book on hay fever which he had written some years ago and which had been withdrawn and was not now obtainable. The journalist took no notes, and was not given a copy of the book or any written information. When the treatment was over he said to Mr. Lloyd that he might write an article on it. Would there be any objection? Mr. Lloyd said that if an article was written, on no account must his name be mentioned owing to his enormous practice. The article appeared next day. Mr. Lloyd was so busy that he did not pay a great deal of attention to it; but he protested vigorously to the journalist on several occasions when he came for treatment, saying that to have published the article so quickly without letting him know was very unfair and had placed him in a very awkward position. Not a word in the article was his own, and though some of it was founded on his conversation during treatment, much of it bore no relation to anything he had said. In reply to the protests the journalist had smiled; eventually he had said he was sorry. Mr. Lloyd sent neither protest nor any other communication to the *Daily Mail*, but when the journalist asked him if he would care to see a few selected patients who had inquired about the treatment he replied that he would be willing to see anyone whom the journalist liked to recommend, and informed one of his two secretaries that appointments should be given to a few cases which the journalist might send. Mr. Lloyd himself was so busy that he dealt only with that section of his correspondence marked "Personal," and owing to a misunderstanding his secretary had given cards to all those persons whose names were sent from the newspaper's office. He was not in general in the habit of asking patients where they came from, and neither the journalist nor those whom he recommended enjoyed special terms. Mr. Lloyd denied absolutely that he sought advertisement or professional advantage from the publication of the article.

The Council deliberated in camera and the President announced that the facts alleged had been proved to the Council's satisfaction, and that Mr. Lloyd had been adjudged guilty of infamous conduct in a professional respect. The Registrar had been directed to remove his name from the Register.

The Case of Henry Thompson Keating.—Dr. Keating, registered as of the School of Hygiene, Mount Pleasant Avenue, Liverpool, M.D., C.M. McGill, appeared on Monday, Nov. 30th, on a charge of enabling an unqualified and unregistered person called Looker to treat a patient named Mrs. Hedges, or otherwise to engage in professional practice; and of having been associated for the purpose of obtaining patients with an unqualified or unregistered person who procures or sanctions the advertising or publication of notices directing attention to his professional skill. Mr. Le Brasseur appeared for Dr. Keating, and Mr. Hempson on behalf of the Medical Defence Union which was the complainant. Mr. Le Brasseur said that the proceedings were the result of an unfortunate coincidence. Dr. Keating served in a medical unit in New York in which Looker was a medical officer. He had never had reason to doubt his qualifications, either then or afterwards when Looker was engaged in medical practice in America. In August, 1925, he paid a social visit to Looker, who had come to London, and was asked to see Mrs. Hedges. He examined her and afterwards made arrangements for her to have an operation. On no other occasion was he connected with Looker's practice. Dr. Keating had not seen advertisements of the practice before he saw the case; he was unwilling to operate on Mrs. Hedges, and he had not the slightest intention of unprofessional conduct. Evidence was produced showing that Dr. Keating by illness had been prevented from ventilating his case in order to anticipate the charge being brought. After the Council had deliberated in camera the President announced that the charges alleged had not been proved to the satisfaction of the Council.

The Case of Joseph Stenson Hooker.—Dr. Hooker, who is registered as of 4, Spanish-place, London, W. 1, L.S.A. Lond., L.R.C.S. and L.R.C.P. Edin., M.D. Durh., appeared before the Council on the charge—

> That, being a registered medical practitioner, you have sought to attract to yourself patients and to promote your own professional advantage: (1) By associating yourself with the advertising and canvassing carried on through the medium of articles published in the issues of March 21st and 28th, April 4th and May 30th, 1925, of *John Bull*, relating to an alleged "consumption cure," known as the Newell treatment; (2) by sending circular letters regarding the "cure" to persons not under your charge, but whom you thereby hoped to secure as patients; (3) by endeavouring in your own advantage to induce registered medical practitioners to use in the treatment of their patients, and to make themselves responsible for a medicament of whose properties and action such practitioners were ignorant, while refusing to disclose to them the compositions or formula thereof. And that in relation to the facts so alleged, you have been guilty of infamous conduct in a professional respect.

Dr. Hooker was represented by Mr. Leon Freedman, his counsel, instructed by Messrs. Lattey and Hart, and the complainant was the Medical Defence Union, represented by Mr. O. Hempson, solicitor.

During March and April, 1925, a series of four articles appeared in *John Bull* dealing with the Newell Treatment for Tuberculosis. These articles stated that the inventor of the remedy had consulted a fully qualified West End specialist in tuberculosis (whose name could not be given owing to the rules of the General Medical Council), who had had a very high percentage of cures amongst his patients, and that a committee had been formed in London to investigate the new treatment. It was suggested in several of the articles that the negative attitude of officialdom and the conservative outlook of the General Medical Council and the Ministry of Health were responsible for holding up the distribution of the remedy to suffering humanity, and there were photographs in illustration of Sir Donald MacAlister, Mr. Neville Chamberlain, Sir George Newman, and others. Readers of the newspaper were encouraged to write to the editor, who would put them in touch with doctors who could give the treatment. Mr. Hempson produced evidence that a reader who had taken this advice received a letter to say that the inquiry had been passed on to the London doctors investigating the treatment and that he later had a typewritten communication, signed on behalf of Dr. Hooker, saying that if the inquirer's own doctor was unwilling to give the treatment it might be possible to direct him to a doctor in the district who could do so, or possibly it could be arranged that one of Dr. Hooker's own staff should give the treatment. A committee of duly qualified medical men was in constant attendance for such cases. Later the inquirer had a letter saying that on receipt of 2 guineas, a minimal sum arranged to cover overhead expenses and the high cost of the medicaments, Dr. Hooker would send to the patient's doctor enough of the remedy to last for a month. The treatment, it was stated, could only be given by duly qualified medical men. A manifesto to the medical profession was afterwards issued which stated that the remedy was not a secret remedy in the accepted sense since Dr. Hooker and other investigators were aware of its components. The promoters were getting on with the work of curing tuberculosis rather than facing carping critics. The remedy could be guaranteed as absolutely harmless. In a later letter Dr. Hooker said that there were now 600 medical practitioners using the treatment.

Dr. Hooker appeared before the Council in such poor health that he was unable to tender his defence in person and his counsel read a declaration on his behalf. He said that he had never sought to attract patients to himself by advertisement and that at his age such an intention would be unthinkable. He had received the formula of the remedy from the inventor in strict confidence, and though he had been very anxious to reveal its exact nature to the profession, he had not had the right to do so. He had formed the highest opinion of the value of the treatment and had been, and was, extremely anxious to place it in the hands of doctors who were attending sufferers from tuberculosis. The circular letter which had been quoted recommended inquirers to apply to their own doctors, and it was far from the intention of the committee to attract patients to themselves. The suggestion that patients might receive treatment from the committee was in the nature of a last resort, if it was quite impossible for them to receive it otherwise; but it had been pointed out to him that the letter might have a wrong interpretation put upon it, and he had instantly cancelled its circulation. Dr. Hooker then gave an account of negotiations with the General Medical Council and the Ministry of Health. The Council had refused to deal with the matter on the grounds that it was outside its statutory function. The Ministry had received the formula under the usual pledge of secrecy and had also had an account of cases which had been treated. Dr. Hooker was understood to say that negotiations with the Ministry were still in progress. The discoverer of the remedy had only consented that the formula should be disclosed to the Ministry on condition that this was done through the medium of *John Bull.* Dr. Hooker said that he had supplied materials for the articles only on the pledge that the name of no doctor concerned should appear. His whole object had been to get the medical profession, and the profession only, to try the valuable remedy.

Mr. Freedman said that his client had obviously been animated throughout by a great enthusiasm and by a belief that he could benefit humanity. Mr. Hempson said that the pledges under which the formula was revealed to the Ministry had made it impossible to broadcast the good news—if it were good news—about tuberculosis to the profession. He could not accept the suggestion that Dr. Hooker's conduct had been disinterested. The Council considered the case in camera and the President announced that the charges had been proved to its satisfaction and that the Registrar had been directed to remove Dr. Hooker's name from the Register.

The Case of Sesi Kapo.—The last case before the Council was that of Mr. Kapo, registered as of 49, Broad-street, Lagos, Nigeria, M.B., Ch.B. Edin., who appeared on the charge—

> That, being a registered medical practitioner, you conspired with one Albert Taiwo, by supplying to him a fictitious account of £25 for professional services alleged to have been rendered by you to the wife and child of the said Albert Taiwo, in order to enable the said Albert Taiwo to withdraw money from the Provident Fund of the Nigerian Railway, which he was not entitled to withdraw and could not withdraw without a detailed account signed by a medical practitioner. That in respect of such offence, you were tried with the said Albert Taiwo in the District Court of Lagos, and were on March 6th, 1925, convicted of conspiracy and of forging the said account, and were fined £50 or six months' imprisonment, which conviction was upheld on your appeal to the Supreme Court of Nigeria. That, by an Order made on June 15th, 1925, as the result of the said conviction, under Section 13 of the Medical Practitioners' and Dentists' Ordinance, Chap. 46, the Office Administering the Government in Council directed the Registrar of Medical Practitioners and Dentists to strike out your name from the Register. And that in relation thereto you have been guilty of infamous conduct in a professional respect.

The case was reported to the Council by the Colonial Office on information received from the officer administering the Government of Nigeria. Mr. Harper, solicitor to the Council, opened the case by quoting from the records of the trial held in Nigeria. Mr. A. Neilson, K.C., who appeared for Mr. Kapo, objected that it was impossible to bring as evidence an account of proceedings conducted elsewhere which were not in the knowledge of any member of the Council. Such an account was not evidence by itself unless witnesses were brought. It was unfair to read an account of a prosecution unless he, Mr. Neilson, had an opportunity to cross-examine the witnesses whose testimony had led to the conviction. The Council's solicitor replied that as the Council had no powers to summon witnesses or to swear them when they came, if the present objection were upheld it would be very difficult to try a case when the witnesses were outside the kingdom. Mr. Neilson said that the fact that the Council was a domestic forum, in which the Council was trying one of its professional brethren, did not make it permissible to try the case in a looser way than would be permitted in a court of law. The legal assessor to the Council said that it was proposed to prove that Mr. Kapo had been struck off the Nigerian Medical Register and convicted in Nigeria. On that evidence the Council would be entitled to strike the name off the Register, but an inquiry into the case was being made in order to discover whether there were extenuating circumstances. The fact that no witnesses appeared might affect the weight ot the information, but did not render it inadmissible. Evidence of court-martials held abroad was accepted. The fact of conviction was itself evidence which should be considered. Mr. Neilson asked to see the certificate of conviction, but this could not be produced. Mr. Neilson objected that production of the certificate was an essential preliminary to any proceedings. The President said that the Council was not treating the case as a conviction but on its merits.

The Council's solicitor then read part of the account of the proceedings held at Lagos which led to Mr. Kapo's conviction. The prosecution had suggested that Mr. Kapo's account for professional attendance was wholly fictitious and had emphasised the fact that a police search had failed to find any wife of Albert Taiwo whom Mr. Kapo had attended. Mr. Neilson examined Mr. Kapo in the witness-box. He gave particulars of his attendance on a woman said to be Albert Taiwo's wife and of the bill he wrote out for professional services after delivering her of a child. Mr. Neilson asked for the production of the bill, which was an important document at the Lagos trial. The Council's solicitor admitted that he could not produce it, which Mr. Neilson considered very unfortunate. Mr. Kapo denied that he had ever conspired with Taiwo or anyone else and that he ever had any reason to do so, and a testimonial to his character was read. In closing his client's case Mr. Neilson said that this was by the President's definition a new inquiry. Yet the prosecution had produced no one who could be cross-examined nor any of the relevant documents which were produced at the trial. The trial itself did not seem to have taken the clear course that trials take in England. No one had even suggested a motive for Mr. Kapo's single straying from the straight path. Why should a man imperil his professional career and an income of £500 or £600 for the sake of a share in £25 ? Why, for the matter of that, should Albert Taiwo have bothered to conspire to obtain £25 from the provident fund seeing that he would have to pay it back out of his wages ? As to the charge that the supposed wife of Taiwo was an imaginary person, the chief witness called by the prosecution—namely, Taiwo's " senior wife "—stated clearly that she had existed. The onus of proving the contrary—even if the prosecution had not accepted the evidence of its chief witness as it was bound to do—rested with the prosecution. The judge had admitted that it was just possible that Mr. Kapo had attended this woman, and if there was a doubt the accused should have had the benefit of it. The trial in Lagos, Mr. Neilson was sorry to say, appeared to have been hopelessly muddled. There were not materials before the Council to prove that Mr. Kapo had been properly convicted ; there had been many remarkable features about the proceedings, and no motive had been suggested.

After the Council's solicitor had replied the case was considered in camera, and the President announced that the facts alleged against Mr. Kapo in paragraph 1 of the charge had not been proved to the Council's satisfaction. (His name therefore remains on the Register.)

Restorations to Medical Register.

On Nov. 26th it was announced that the Registrar had been instructed to restore the names of Haydn Brown, Patrick Joseph Honan, Trevor Owen Williams, and William Mortimer Sheen to the Medical Register.

EXECUTIVE COMMITTEE.

The report of this Committee contains an account of the negotiations for the re-establishment of reciprocity with Italy referred to in the presidential address on Nov. 24th. Inquiry on the practice of medicine in this country by holders of foreign degrees elicited the information that reciprocity can only be established with a country in regard to which the King has by Order in Council declared that Part II.

of the Medical Act, 1886, shall apply. When reciprocal relations are established it becomes the duty of the General Medical Council to consider which medical diplomas granted in the said country shall qualify their holders for registration by the Council. At present the only foreign countries with which reciprocity exists are Italy and Japan. In view of the overcrowding of the medical profession in Austria it has been suggested that the emigration of Austrian doctors to foreign countries is desirable. It is understood, however, that no foreigner can practise medicine in Austria unless he becomes an Austrian citizen, and this condition, of course, precludes reciprocity. In reply to inquiry the Council stated that the number of British registrations "during this year and for the past two years has been considerably greater than usual, and some time will probably be required before the practitioners newly qualified in this country are absorbed into private practice and vacancies in the public services. It is therefore probable that foreign doctors would have some difficulty in establishing themselves satisfactorily in this country."

Public Health Committee.

The report of this committee deals chiefly with the new regulations for the Diploma of Public Health, which require that candidates shall receive instruction over a period of not less than 12 months subsequently to gaining a medical qualification and lay down that the diploma shall not be granted until two years after such qualification. There has been correspondence with various licensing bodies on their interpretation of the new rules. It is noteworthy that the Council recognises for Part I. of the Diploma the courses of lectures and practical instruction given at the Staff College to officers of the Royal Army Medical Corps, and at the Naval Medical School, Greenwich, to medical officers of the Royal Navy. At a meeting of the committee held in May last a communication was received from the Society of Medical Officers of Health giving a considered opinion on the practical training required for the diploma. It was resolved, inter alia, that the committee would keep in mind the suggestions offered and would have regard to them in the interpretation of the rules. It is stated that the Diploma in Hygiene of the University of Cambridge is not recognised by the Council.

MEDICINE AND THE LAW.

The Time-Limit Upheld.

The Court of Appeal has promulgated an important decision upon the limitation of legal liability in the case of a medical practitioner discharging public duties. The Public Authorities Protection Act of 1893 contains, as was illustrated in a recent Edinburgh case,[1] a not unreasonable protection for persons acting in execution of statutory or other public duty. Proceedings do not lie, and are not to be instituted against such persons unless commenced "within six months next after the act, neglect, or default complained of, or, in case of a continuance of injury or damage, within six months next after the ceasing thereof." The wording of the statute is not very happily drafted, and has required legal explanation more than once. It is easy to reckon six months from an act which causes injury or damage. But the phrase "continuance of injury or damage" has been a stumbling-block. The facts on which the decision in the recent case of Freeborn *v.* Leeming is based are briefly these. A man was run over by a motor-car on Sept. 5th, 1923, and was taken into a workhouse infirmary next day. The doctor in charge had no direct contractual obligation towards the patient who was not one of his charges in the ordinary sense; but the law, of course, expects every practitioner to apply reasonably competent skill in the art which he professes. It was alleged that the doctor neglected to make an adequate examination, and that he failed to diagnose a dislocated hip. The plaintiff stayed on in the infirmary till Oct. 15th, and then went home at his own risk. The date is important, because it was the day on which he passed out of that doctor's care. Fresh medical opinion, it was alleged, subsequently diagnosed the dislocation, but found that it was now too late to reduce it; an operation had to be performed, and in consequence the patient has one leg permanently shorter than the other.

Six months and six days after the date on which he left the workhouse infirmary the plaintiff issued his writ, and began his action against the infirmary doctor. Prima facie his action was six days too late. Obviously, if the permanent shortening of his leg was a continuing injury or damage within the meaning of the Act of 1893, he could safely have sued the doctor without time-limit at any moment during the rest of his life. But there was solid legal authority against this view. In Carey *v.* Bermondsey Borough Council (1903) the Court of Appeal decided that the continuance of suffering is not a continuance of injury or damage within the meaning of the Act. Lord Halsbury, who delivered judgment to that effect, had a special gift for common-sense interpretation. Words, he said, must be reasonably interpreted. It was not unreasonable to say that if there was a continuance of an act causing damage, the injured person should have an action at any time within six months of the ceasing of the act complained of. But that was wholly inapplicable to a case where there was no such continuance of the act complained of and where the only suggestion was that, in consequence of the negligent act, the victim was not such a good man as he had been before. The county court before which the recent case was first heard tried hard to find a way round Lord Halsbury's decision. An ingenious argument by the plaintiff's counsel was accepted. The dislocated hip, it was argued, if properly diagnosed originally, would not have been cured, even with proper treatment till, say, eight or ten weeks after the accident. It was not until this prospective date of cure was reached that the plaintiff (being at that moment a still disabled man instead of a now quite cured man) had his full right of legal action. It was at this imaginary but guessable date that the plaintiff's damage arose. If the six months had been reckoned from that date, the plaintiff's action was begun in ample time. Taking this view the county court judge awarded him £1800 damages, but the Divisional Court upset the award on the ground that the action was not begun within the six months. This latter view the Court of Appeal has now confirmed.

The case may be carried to the House of Lords, but any other view than that expressed in the judgment of the Court of Appeal would be disastrous to medical practitioners who hold official positions and would make nonsense of the Act.

Mistaken Identity.

The reissue of Mr. Sully's brief study[2] in the psychology of identification is timely. Police methods were criticised in Major Sheppard's case, and, still more recently, the Lord Chief Justice has commented on the abuse of photographs as a preliminary to identification. The essayist takes the imaginary example of a passenger dashing hurriedly one night into the last up train leaving a local railway station. Jones, the porter, is subsequently asked to identify the man. The newspapers next day report a murder. The wanted man is rumoured to have got away by the last train to London; presently it is said that a young and well-dressed man who travelled by that train has been arrested. Jones attends the identification parade with a memory which blends genuine

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[1] Gorrie *v.* Smith, The Lancet, Nov. 7th, p. 990.

[2] Mistaken Identity. By Clifford Sully. London: Longmans, Green and Co. 1924. Pp. 15. 6*d.*

(and perhaps inaccurate) recollections with items read or heard. If confronted with the arrested man, Jones may be predisposed to believe that the man he remembers is the man he sees; else why would he be there? Even if photographs have not been displayed beforehand, other forces of suggestion are at work. Though himself smartly dressed, the man may be put up amongst a number of ill-dressed navvies (as was alleged in Stinie Morrison's case). An involuntary self-consciousness may betray the accused man, or some action of his companions may tell a tale. The essay under review makes various proposals. Since it is the first identification that counts (subsequent re-identification being merely formal), Jones might be put on oath to make him more consciously careful; or he might be specially warned of the difference between recognising a person previously seen and spotting a probable criminal. There might even be two or more identification parades, the arrested man being absent from the first or second. These and other observations in Mr. Sully's essay were well worth making. Official complacency has under-estimated the effect of suggestibility. It will be interesting to see (if they are not regarded as confidential) the new regulations which the Home Secretary has undertaken to make upon the subject of identifications.

AMERICAN PUBLIC HEALTH ASSOCIATION:

ANNUAL MEETING.

(FROM OUR OWN CORRESPONDENT.)

THE fifty-fourth annual meeting of the American Public Health Association, held in St. Louis, Mo., was probably the most successful in its history, the registered delegates numbering 911. The epidemic of typhoid fever last winter that was traced to polluted oysters resulted in several papers on

Oyster Sanitation.

These were read to a joint session of the Sections on Public Health Administration, Laboratories, Sanitary Engineering, and Food and Drugs. Drs. Charles Krumwiede and William H. Park, of the New York City laboratories, described observations with oysters that they had contaminated artificially (1) with cultures of typhoid, and (2) with stools from typhoid carriers. *B. typhosus* was found in the liquor and bodies after 49 days storage—the longest period tested, and in excess of the maximum period of storage that is found under actual trade conditions. The changing of oysters to fresh sea-water has a marked effect in diminishing the number of *B. typhosus*; three such changes eliminate 99 per cent. However, even after 18 changes during 24 days *B. typhosus* was isolated. When chlorinated water is used the effect is still more marked. Yet four successive treatments failed to eliminate all *B. typhosus* from the contaminated oysters. The conclusion drawn was that the safeguarding of the oyster-supply must rest on preventing contamination of the beds rather than on treatment of the oysters by existing methods of purification.

Bacteriophage in Surface Waters.

Prof. Lloyd Arnold, of the Loyala University School of Medicine, discussed the significance of bacteriophage in surface waters. Its concentration was found to vary directly with the degree of sewage pollution. Prof. Arnold agreed with other observers that since bacteria are not growing under these conditions there was no autolysis and no speeding-up of the process of purification due to bacteriophage. On the other hand, bacteriophage ingested with an infective dose of typhoid bacilli was liable to cause autolysis of the first cultures, and unless (or until) a resistant strain was developed the cultivation of the typhoid bacilli was prevented. Experimental evidence was presented in support of these conclusions.

In the Section on Epidemiology important papers were read by Prof. E. O. Jordan on influenza, and Dr. Abraham Zingher on the prevention, control, and specific treatment of diphtheria, scarlet fever, and measles.

Perhaps the most important item of business was the creation of a committee on dairy products. Milk control has still many controversial aspects, and it is hoped that a committee representing the sections of Public Health Administration, Sanitary Engineering, Food and Drugs, and Child Hygiene will be able to furnish an important consensus of opinion on some of the disputed doctrines.

A resolution was passed urging the more effective centralisation of federal health work under the direction of a competent trained official. The resolution is to be presented to President Coolidge by a committee of five.

Officers Elected.

As President for the ensuing year the governing council elected Prof. C. E. A. Winslow, of Yale, who was for some time in charge of the medical work of the League of Red Cross Societies at Geneva, Switzerland, and has been indefatigable both in teaching and research in this country. Dr. John A. Amyot, Deputy Minister of Health of the Dominion of Canada, was elected first vice-president. Next year the meeting is to be held in Buffalo, where the strength of the Canadian representation should be even more satisfactory that it has been this year at St. Louis.

BUCHAREST.

(FROM OUR OWN CORRESPONDENT.)

Campaign against Venereal Diseases.

ALTHOUGH State aid for the fight against venereal diseases in the new provinces of Roumania ceased on July 1st of this year, because the Ministry of Finance failed to appropriate the necessary funds, the campaign will continue with the vigour that has characterised the work during the last three years. As the Supreme Sanitary Board set aside a considerable sum for this important phase of public health service for the current biennium, the division of social hygiene will be able to carry on for a time. Owing to the uncertainty of continued financial aid, the eight venereal dispensaries and clinics now operating in Transilvania, Bukovina, and Bessarabia slowed up somewhat during the last few months. An agent of the department is making the round of these clinics with the good news that the usual funds will be forthcoming from the State. The message is proving very stimulating.

Proposed War on Rats in the Roumanian Ports.

A proposed amendment to the building orders, now pending before the Board of Public Sanitation, would make compulsory the rat-proofing of all buildings within 600 ft. of the water-front in all the port cities, such as Braila, Constanza, Galatz, and Giurgiu. According to the estimate of the port sanitary officers there are several million rats in these cities, the property loss caused by them annually runs into millions of lei, and the rats are a menace as carriers of bubonic plague. The new measure provides that no certificate for occupancy of any structure within 200 metres of the water-front shall be issued unless its foundation walls are constructed of concrete or similar material and covered with wire mesh. All windows and other openings must be protected with wire screens, and windows and doors must be arranged to permit fumigation with hydrocyanic gas.

Pregnancy in Tuberculous Women.

At a recent meeting of the Medical Society in Jasy Dr. Rosianu gave a summary of the views held at present on the question of pregnancy in tuberculous women. If pregnancy has taken place the woman should be kept under careful medical observation, and if the tuberculous disease grows worse, abortion should be strongly recommended. During the later months of pregnancy the induction of premature labour does not offer any advantage over labour at full term, and is fraught with risk for a tuberculous patient. Moreover, as a tuberculous mother may give birth to a healthy child with fair chances of good health later on, it would be unfair to sacrifice needlessly the life of an infant. Dr. Rosianu does not believe in making a routine of interrupting the pregnancy, as advocated by Maragliano and Hamburger.

Phototherapy in Rachitis.

Dr. Ramniceanu reports the results of ultra-violet treatment made with special arc lamps in 42 cases of rachitis. The patients ranged from 1 to 7 years of age. Every month comparative rontgenograms of the epiphyses of the right forearm were made on four children. In all cases that could be thus controlled there was an undoubted improvement in the clinical picture; in most cases a complete cure was effected. At first the treatment was applied every second day, but of late he has given daily treatments. He begins with five minutes each to the abdomen and back at one sitting. The time is lengthened by two minutes at each sitting until 15 minutes each is reached. No ill-effects following the treatment were noted. No changes in diet were ordered and no medication was employed. The number of sittings was usually from 40 to 60. The rontgenograms established the fact that the bones were becoming harder and firmer. The initial softness of the bones should, of course, be taken advantage of to straighten curvatures and correct deformities, while irradiation is continued, so that when the bones become firm they may be in the corrected position.

Gastro-intestinal Disorders in Albania.

There is an alarming increase of gastro-intestinal disorders in Albania; thousands of working men are unemployed, and are compelled to live on a semi-starvation diet. The sanitary conditions of the bakeries are very unsatisfactory; the bread is bitter and made of inferior flour (chiefly maize) in a primitive manner. Another great source of gastro-intestinal disease is the enormous consumption of decayed vegetables, raw or in a half-cooked condition, and dried fruit, chiefly prunes, in partly decomposed state. The cases of gastro-intestinal disorders are for the most part mild, and recovery takes place without complication; only a few fatal cases have as yet been reported.

Donations and Bequests.—The Liverpool Hospital Sunday Fund this year—the fifty-fifth annual collection—amounted to £7752, being £413 more than the amount subscribed last year.—Princess Beatrice has given £105 to start a £15,000 fund for the renovation of the Royal Isle of Wight County Hospital.—Lady Violet Charlotte Julia Maria Watt, Brighton, left property of the value of £17,825. She left £500 each to the Royal Sussex County Hospital, the Alexandra Hospital for Sick Children, Brighton, the Throat and Ear Hospital, the Hospital for Women, Brighton, the Brighton, Hove, and Preston Dispensary, and £250 to Our Dumb Friends' League, and the residue of the property to her executor for such charitable purposes as he may select. —Mr. David Levy, Brixton, left £16,440. After various bequests he left the residue of the property in trust for his wife for life, and then to King Edward's Hospital Fund for London.—An anonymous donor has given £1000 to Crickhowell Memorial Hospital in commemoration of the visit of the Prince of Wales to Glenark Park, Crickhowell.—Mr. John David Miller, Clifton, Bristol, left £500 each to the Bristol Royal Infirmary and the Bristol General Hospital; £250 to Muller's Orphanages, Ashley Down, Bristol; and £150 each to the Bristol Eye Hospital and the Bristol Hospital for Sick Women and Children.

Correspondence.

"Audi alteram partem."

REPRESENTATION OF MEMBERS ON THE COUNCIL OF THE ROYAL COLLEGE OF SURGEONS OF ENGLAND.

To the Editor of The Lancet.

Sir,—I gather from the President's remarks at the annual meeting of Fellows and Members, held last week, that the Council of the College is to consider further the question of the representation of members on that body. Since that meeting, I have had before me the information regarding the history of this movement, which was put before the President by a deputation of the Society of Members of the College, and I am astounded to find that the right of representation on the College Council originally existed and was taken away from them, as I understand, surreptitiously and illegally, about half a century ago by the then Fellows.

In these circumstances, it is amazing to think that a body of gentlemen of the calibre of those who form the Council, and among whom, at the present time, I am proud to reckon many friends, could refuse to rectify such a gross injustice to the Members of the College, and one which has continued for over such a long period. Although the Society of Members have been the movers in this matter, the responsibility of the Council exists to far beyond their limited membership. Though I am not a member of this Society, I consider that the Council owes a sacred duty to the body corporate of the College to put this matter right. I had the pleasure of hearing Dr. Haden Guest's address, and I think he made out a case which is beyond dispute. The Council now has the opportunity of rectifying the injustice of its predecessors, and I hope that it will proceed to do so quickly.

Should the Council of the College refuse to do this, it seems to me that the logical course for it to pursue, in seeking a new charter, would be to have the members of the College degraded into a body of licentiates, such as exists in the sister college. I do not suppose for a moment that it would be allowed to do that; but to my mind it is the only logical alternative to the retention of the status of membership. I am quite sure that it would be to the advantage of the College and, indirectly, of the public, whom it serves, that it should agree to receive one or two members on its Governing Board. It appears to me to be very unfair that I, as a member of a university, should have a voice in the government of that university and a Parliamentary vote for its Member, while thousands of members of the College should not even have one representative on its College Council. I am, Sir, yours faithfully,

Lewis G. Glover, M.D., M.R.C.S., L.R.C.P.

Nov. 26th, 1925.

*** The subject is dealt with in another column. —Ed. L.

THE TROPHOBLASTIC HYPOTHESIS OF CANCER.

To the Editor of The Lancet.

Sir,—It is surely unreasonable of anyone to expect to find historical references to other theories in an address summarising the work of many years. After what Dr. Murray has written, however, concerning my presumed want of knowledge on this matter, justice demands that I comment severely upon his own ignorance of the literature in respect of a previous publication of mine in The Lancet [1] in which, when dealing with the importance of chorion epithelioma in relation to certain aspects of the ætiology of cancer, I acknowledged that, though I had arrived at a similar conclusion independently, I subsequently discovered that I had been anticipated in this matter by Dr. Adami in a discussion on Cancer at the Chelsea Clinical Society in March, 1902[2]—that is, prior to Dr. John Beard's publication[3] to which Dr. Murray has referred. Of Dr. Adami's paper Dr. Murray presumably is also ignorant.

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[1] The Lancet, 1924, i., 267.

We owe to Marchand and a group of German workers, and not to Beard, the demonstration that chorion epithelioma is a malignant growth sui generis derived from the embryonic trophoblast. But all this is common knowledge, and it is hardly likely that anyone to-day would claim it as original! If Dr. Murray will read, and read carefully, my address he will see that I state very definitely that our working hypothesis is based on known facts, as it should be. The difference between our views and Beard's confused ideas is striking. Beard regarded the fertilised ovum as producing an alternate asexual generation; on it is developed an individual, which for clearness we may term the blastula. From this there was now unfolded and developed the sexual individual—the embryo. His theory was that the asexual part (the chorion) might continue to exist after the sexual product had been destroyed or removed, and from this it followed that secondary growths in the lungs and elsewhere were to be considered asexual generations. Beard sums up his hypothesis in the last paragraph of the paper mentioned in the following words:—

> Granted the facts of the origin, migrations, and history of the germ-cells of vertebrates, and assuming the course of the life-cycle to be that previously indicated, by hypothesis cancer is derived from vagrant primary germ-cells, which, instead of forming a more or less complete embryo or embryoma, skip this and give rise to a larva or phorozoon of indefinite unrestricted powers of growth.

Adami and I have had no such ideas. Our conception has been that the chorionic epithelium grows and penetrates the uterine tissue in performance of a special function—that is, to secure nourishment for itself and the growing embryo; that through it foodstuffs are absorbed from the maternal blood, and the other interchanges are made; that if the fœtus die or become aborted this normal function ceases to be required, and that now, to employ Adami's expression, the habit of work being interrupted, the habit of growth may continue, or as I expressed it, the embryonic restraint being removed the chorionic epithelium may multiply and become excessively malignant. This is totally different from John Beard's hypothesis, which I agree could not be fruitful.

With this statement, which should have been entirely unnecessary, I must leave your readers to judge Dr. Murray's letter. Speaking not only for myself but also for the whole staff of the Liverpool Cancer Research Fund, I wish to say that we most cordially invite criticism of our work on its scientific merits. We do not want opinions, pious or impious; we, like all other honest workers, want the truth.

I am, Sir, yours faithfully,

Liverpool, Nov. 30th, 1925. W. BLAIR BELL.

PS.—Will you allow me to say that the following paragraph was omitted by accident from my Toronto address in THE LANCET of Nov. 14th, but will appear in the reprints. It should follow the first paragraph in the left-hand column on p. 1005. Those interested will be able to read it into the rest of the argument:—

"Here it seems proper to call attention to a point of interest that affords considerable support to the explanations I have given of certain pathological phenomena; this obvious point appears to have escaped description, and even notice, at the hands of pathologists—at least, I am not aware of any statement on the matter. It is this: chorion epithelioma—the most malignant of malignant diseases—is not a dedifferentiated growth as is every other malignant neoplasm; it is a simple hyperplasia of the chorionic epithelial elements. Dedifferentiation cannot occur for the chorionic epithelium is normally malignant, and is itself the ancestral type."

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[2] Clinical Journal, June 18th, 1902.

[3] THE LANCET, 1902, i., 1758.

PROPHYLAXIS OF THE COMMON COLD.

To the Editor of THE LANCET.

SIR,—I have read Dr. Simey's address with great interest. I would like to put forward the suggestion that a common source of infection is the dangerous practice of compelling adolescents to spend an hour or more in all weathers watching matches. The idea that it is disloyal to the school not to appear to enjoy doing so compels many boys and girls to stand on wet ground in cold winds, thus lowering their vitality and resistance to infection. It is not necessary to go back to the classic experiment which produced anthrax in fowls to realise that it must be harmful in human beings. Would it be possible for medical officers of schools to arrange that only those who desire to watch matches should do so, and for the rest of the school to be occupied in keeping themselves warm, during the winter months, at any rate?

I am, Sir, yours faithfully,

STELLA CHURCHILL.

Chiswick, W., Nov. 24th, 1925.

MALARIA AS A THERAPEUTIC AGENT.

To the Editor of THE LANCET.

SIR,—In connexion with the malaria treatment of general paralysis, it is interesting to learn from a recent article by Dr. Cabanès[1] that in the Middle Ages it was believed that quartan ague cured epilepsy. Dr. Cabanès quotes Louis XI. as begging the Prior of Notre-Dame des Salles, at Bourges, to pray "incessamment Dieu et Notre-Dame des Salles pour moy, à ce que leur plaisir soit de m'envoyer la fièvre quarte, car j'ay une maladie dont les physiciens disent que je ne puis être guéry sans l'avoir." According to Dr. Cabanès, Louis XI. was an epileptic. It appears he also suffered from leprosy, and the fact throws light on the king's strange behaviour. Notwithstanding such drawbacks, he yet managed to weld a disunited country into a kingdom.

I am, Sir, yours faithfully,

London, W., Nov. 29th, 1925. GEORGE PERNET.

PRECANCEROUS STATES.

To the Editor of THE LANCET.

SIR,—My experience of tropical granulomata in Calcutta may throw light, however slight, on "precancerous" states in general. Tropical granulomata are frequently subjected to irritation to such degrees that it is remarkable they do not undergo malignant changes more often than they do. The histological changes observed during the transition of granulomata to malignancy are interesting. There is a varying degree of leucocytic infiltration with a relative preponderance of lymphocytes. This may be due to irritation caused by a specific virus or some changes produced in the invading epithelium. The epithelial cells proliferate and extend both in the longitudinal and vertical planes in the granulation tissue, its proliferation towards the periphery being at first slow. Side by side, there is connective tissue reaction. The perilymphatic and endolymphatic distribution of cells, the epithelial proliferation and invasion and cellular reaction vary according to the type of granuloma, the irritation, and the stage of transformation. In a few cases in which a malignantly transformed granuloma tends to revert to non-malignancy, the connective tissue proliferation seems to result in fibrosis which pervade the growth, the rate and extent of epithelial proliferation become reduced and the cells themselves become more and more normal in character.

I am, Sir, yours faithfully,

K. K. CHATTERJI, F.R.C.S.I.

Southwell-gardens, London, S.W., Nov. 30th, 1925.

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[1] Mercure de France, May 15th, 1925, p. 197.

POISONS IN THE HOME.

To the Editor of THE LANCET.

SIR,—In reference to the useful annotation with this title which appeared in your issue of Nov. 7th may I ask on what grounds it is stated that many essential oils possessing extremely high carbolic acid coefficients are of relatively small toxicity to human beings? As examples, the writer mentions the oils of origanum and of thyme. I am aware that both of these have high carbolic acid coefficients, but where can I find the evidence that they are less poisonous than the higher homologues of phenol?

I am, Sir, yours faithfully,
HENRY KENWOOD,
Nov. 28th, 1925. M.O.H., Stoke Newington.

⁂ The relatively low toxicity of essential oils may be deduced partly from such direct evidence as that the B.P. gives the dose of sandal-wood oil as 0·3–1·8 g., and the U.S. Dispensatory that of thyme oil as 0·2–0·3 g., compared with phenol, 0·06–0·2 g., and partly from the absence of any records of accidental poisoning.—ED. L.

A DISCLAIMER.

To the Editor of THE LANCET.

SIR,—My attention has been called to the issuing of a leaflet announcing a lecture which I was recently invited to give to the members of the Young Men's Christian Association at their hall in Aldersgate-street. On hearing of it I at once telephoned to the secretary that no further distribution should take place. I need hardly say it was issued without my knowledge.

I am, Sir, yours faithfully,
JAMES DUNDAS-GRANT.
London, W., November, 1925.

POLYCYTHÆMIA RUBRA RELIEVED BY X RAY TREATMENT.

To the Editor of THE LANCET.

SIR,—The case described by Dr. S. W. Patterson in THE LANCET for Nov. 28th (p. 1112) is of especial interest both on account of the question of diagnosis and on account of the good result obtained by treatment. A good result of nine months' duration, like that described, seems to me almost incompatible with a diagnosis of true *splenomegalic* polycythæmia rubra, that is to say, the "Vaquez-Osler syndrome," or "erythræmia." I had the opportunity of seeing the patient twice myself before Dr. Patterson saw her and regarded the case as one of "hypertonia polycythæmica," such as those to which F. Geisböck drew attention in 1904, and as I have explained,[1] I believe that such cases are examples of secondary polycythæmia, connected in some way with the high blood pressure of early stages of granular kidney, or with primary hyperpiesia without definite signs of organic renal disease. On both occasions when I saw the patient the spleen could not be felt, and Dr. Patterson admits it was only just palpable when he first saw the case and soon was not palpable at all. Moreover, a high systolic blood pressure of 170–204 mm. Hg has scarcely ever been made out in a true case of splenomegalic polycythæmia. I have paid especial attention to this, as in 1904, with Dr. J. H. Watson,[2] I made out experimentally with the blood of horses that the so-called blood-viscosity (quite distinct from the *true* viscosity of the blood-plasma or blood-serum) depended almost entirely on the richness in erythrocytes. Since then I have been forced to admit that in splenomegalic polycythæmia there must be some compensatory dilatation of the capillaries which prevents the blood pressure rising[3]; indeed, in many typical cases with an erythrocyte count of about 10 millions to the cubic centimetre of blood, the brachial systolic blood pressure is only about 120–130 mm. Hg.

On the other hand, the syndrome "hypertonia polycythæmica" may, I believe, represent merely a phase or episode in the course of a case of high blood pressure, the polycythæmia disappearing after a time, though the high blood pressure persists or increases. The point on which Dr. Patterson is to be especially congratulated, seems to me that the high blood pressure in his case practically disappeared *as well as the polycythæmia*. I shall certainly endeavour to have similar X ray treatment cautiously tried in cases of hyperpiesia, at all events, in cases associated with polycythæmia. Amongst the Hebrews from the East End of London that come as out-patients or in-patients to the German Hospital are many typical examples of hyperpiesia.

I am, Sir, yours faithfully,
London, W., Nov. 30th, 1925. F. PARKES WEBER.

NASAL LAVAGE AND MIDDLE-EAR INFLAMMATION.

To the Editor of THE LANCET.

SIR,—I hope that Mr. Arthur Cheatle's timely communication (THE LANCET, Nov. 28th, p. 1140) upon the dangers of indiscriminate nasal lavage will be assimilated both by the Ministry of Health and by practitioners generally. May I suggest that the employment of a suitable antiseptic powder as a "snuff" is at least harmless to the ears, and is efficacious in relieving obstruction in any case which does not require surgical interference. I am convinced from experience that the use of the fluid nasal douche results in a noticeable increase in secretion and in the progress to a chronic hypertrophic condition, especially so in the recurrent polypoid growths of everyday practice. Moreover, the treatment by a "snuff" is very conveniently carried out, and in the case of children it certainly helps in the teaching of correct nasal breathing.

I am, Sir, yours faithfully,
Manchester, Dec. 1st, 1925. WILLIAM WILSON.

OPERATIONS ON GERM CARRIERS.

To the Editor of THE LANCET.

SIR,—Something more might have been said in your leading article last week in regard to the proposal to render germ-carriers non-infectious by operation. There are two points wherein the case of a healthy carrier treated under compulsion or under strong moral pressure would differ from the normal case. When a practitioner operates ordinarily, the law gives him protection (except in the case of gross carelessness, ignorance, or inattention), first, because he is endeavouring to improve or conserve the bodily health of his patient; and, secondly, because the patient's consent has either been expressly given or can at any rate be tacitly implied. Operation upon a healthy carrier would be not so much for the improvement or conservation of his health as for the safety of the health of others. And if the operation were conducted as a statutory duty rather than at the express or implied invitation of the patient, there would be an absence of the professional protection which the tacit or explicit consent of the patient ordinarily creates. Distant though it may be, this is an aspect of the matter which should be borne in mind.

I am, Sir, yours faithfully,
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[1] Proc. Roy. Soc. Med., Clin. Sect., 1925, xviii., 37.

[2] Folia Hæmatologica, 1904, i., 392.

[3] Brit. Med. Jour., 1925, i., 1108.

Obituary.

RICHARD DENISON PEDLEY, F.R.C.S. EDIN., M.R.C.S. ENG., L.D.S.

Mr. Richard Denison Pedley, consulting dental surgeon to the Evelina Hospital for Children and to Dr. Barnardo's Homes, died on Nov. 25th at India House, Addiscombe, at the age of 68. He received his professional training at St. Thomas's Hospital, where he became demonstrator in dental surgery, and at the Dental Hospital where he later was assistant dental surgeon. In 1883 he obtained the M.R.C.S. Eng., and the following year the Licence in Dental Surgery. In 1887 he became F.R.C.S. Edin. by examination, and eight years later published his first book with the title of the "Diseases of Children's Teeth: their Prevention and Treatment." At this time he was dental surgeon to the Evelina Hospital for Sick Children, and the experience which he had gained by devoting his whole time to the subject of his specialty was embodied in the treatise and made available for medical practitioners and students. This supplied a want of the time, for it frequently happened that the doctor was called upon to take the place of a dentist without having had the necessary training. In 1898 and 1908, respectively, Mr. Pedley published "Hygiene of the Mouth," and jointly with Mr. F. Harrison, "Our Teeth," two books of a more general character. In 1904 he wrote for THE LANCET (1904, ii., 1207) an article designed to direct attention to the neglect by the medical profession of dental disease, predicting that public opinion among other outside forces would compel attention to be paid to this matter. His suggested remedy for this neglect was that medical students should be warned that in all final examinations an occasional question would be put on the causation, effects, and treatment of dental caries. If this were done, he said, "In ten years' time the 13,000 general practitioners who have registered will be well aware of the prevalence of dental disease, which, if they cannot cure, they will do much to prevent." We have travelled far since Mr. Pedley wrote these words. It must have been a gratification to him to have lived to a time when practitioners do attach importance to dental disease and to feel that his influence may have contributed largely to this change of attitude. Mr. Pedley was a past President of the School Dentists Society, a Fellow of the Royal Society of Medicine, and a Fellow of the Royal Society of Arts.

ELIJAH BAXTER FORMAN, M.D. BRUX., M.R.C.P. LOND., J.P.

Dr. E. B. Forman, who died on Nov. 25th at his residence, Chalfont St. Giles, had reached the advanced age of 86 years. He was for 20 years a member of the London County Council, representing North Hackney and South Kensington, and later becoming an alderman. Among the offices he had filled were the vice-chairmanship of the Education Committee and the chairmanship of the Public Health and Midwives Committees; in 1906 he was deputy chairman of the Council.

The son of Mr. E. Forman, of Derby, he was educated privately, entering Guy's Hospital where he gained scholarships in medicine and wrote a prize essay on Bright's disease. In 1863 he qualified with the M.R.C.S. Eng. and L.R.C.P. Lond., and after graduating at Brussels in 1877 obtained the M.R.C.P. in 1889. He started practice in Stoke Newington, moving after a few years to South Kensington, where his whole active professional life was spent. He took an interest from the first in municipal hygiene and had prevision of medical progress in the direction of prevention as distinct from cure. An address on "Medical London," which he delivered at the South Place Institute in 1899, and published in our columns, showed a wide grasp of Poor-law and sanitary administration. Everyone, he said, is concerned in a movement the object of which is to prevent disease and prolong life. He advocated simplification of health administration, and the adoption of a uniform coherent system which only centralisation could bring about. Happily he lived long enough to see the realisation of his ideal in the Ministry of Health.

JOHN ELSDALE MOLSON, M.D., B.CH. CAMB.

THE death took place on Nov. 28th at Goring Hall, Worthing, of John Elsdale Molson, who for some six years represented the Gainsborough division of Lincolnshire in the House of Commons. The son of Samuel Elsdale Molson, he was born on August 6th, 1863, at Montreal, and received his early education in England at Cheltenham College, afterwards entering Cambridge University and becoming a student at Middlesex Hospital Medical School. In 1889 he qualified with the L.S.A., and in the following year took the Conjoint diplomas of the Royal Colleges. After holding a house appointment at Middlesex Hospital, in 1891 he graduated in medicine and surgery at Cambridge University and proceeded to the M.D. degree four years later. While in practice at Chelmsford he was medical adviser to the Convent of the Holy Sepulchre. Later as Surgeon-Major in the 4th Batt. of the Royal Sussex Territorial Regiment he served during the war both in this country and in Egypt, and he entered Parliament in 1918. After retiring from practice he was a justice of the peace for West Sussex.

Dr. Molson married Mary, daughter of Dr. A. E. Leeson, by whom he had three sons and one daughter.

CHARLES EWBANK LANSDOWN, M.R.C.S. ENG., L.R.C.P. LOND.

Dr. Charles Ewbank Lansdown, one of the best-known medical practitioners in the Midlands, passed away with tragic suddenness on Nov. 24th at Cheltenham. The day before his death he attended his patients as usual and seemed in the best of health. Early on the day of his death he complained of pain, and suddenly fell down and expired. A native of Plymouth, he was a student at St. Mary's Hospital, London, and after qualifying in 1891 he was senior resident medical officer of the London Lock Hospital, honorary house surgeon at St. Mary's Hospital, and resident medical officer at Horton Infirmary, Banbury. He settled in Cheltenham and took over the practice of his deceased half-brother. He was surgeon to the Children's Hospital in Cheltenham. He was an enthusiastic Churchman and Freemason. He leaves a widow, a daughter of Dr. Thos. Savage, of Birmingham, one daughter, and two sons, to whom we extend our sympathy.

THE LATE DR. J. F. S. HAY.—A New Zealand correspondent states that the funeral of Dr. Joseph Frank Strong Hay, M.B., C.M. Aberd., formerly Inspector-General of Mental Hospitals in New Zealand, whose death was announced in THE LANCET of Sept. 19th (p. 586), took place in St. Paul's Pro-Cathedral, Wellington, where there was a large attendance of representatives from all sections of the community. Dr. Hay was born in Lucknow, India, and graduated in medicine at Aberdeen University. After some experience of mental work in Scotland he went to New Zealand in 1897, and on the death of Dr. Duncan McGregor in 1907 he was appointed Inspector-General of Mental Hospitals. In 1923 he married Mary Stuart, daughter of the late Right Hon. R. J. Seddon.

MANCHESTER EAR HOSPITAL.—This hospital draws its patients from an extraordinarily wide area, even from very distant towns, but the financial support from many of these, areas comprising 224 towns, is far from adequate and the financial year finishes with an adverse bank balance. During the past year there were 5580 outdoor patients and 525 in-patients. The number of operations was 995. There is a waiting-list of over 900 patients.

The Services.

ROYAL NAVAL MEDICAL SERVICE.

Surg. Comdr. (retd.) E. D. Rutherford to be Surg. Capt. (retd.).

ROYAL ARMY MEDICAL CORPS.

Capt. J. A. Nicholson retires, receiving a gratuity.

TERRITORIAL ARMY.

Capts. F. W. Goodbody and J. B. Foubister, having attained the age limit, are retired and retain their rank.

Capt. J. McCulloch (late R.A.M.C.) to be Capt.

Capt. J. W. Macfarlane resigns his commn. and retains his rank.

ROYAL AIR FORCE.

H. I. Clapperton (temp. Lt., Dental Surgeon, General List, Army) is granted a temporary commission as a Flying Officer on attachment to the R.A.F.

INDIA AND THE INDIAN MEDICAL SERVICE.

The King has approved the relinquishment of their temporary commissions by Capts. Manchar Lal Bhagat and Keshav Ganesh Mohile, who are permitted to retain the rank of Capt.

On return from leave the following officers are posted as indicated : Lt.-Col. R. F. Baird, Civil Surgeon, Allahabad ; Lt.-Col. E. C. Hepper, Civil Surgeon, Bareilly; Lt.-Col. H. Ross (late Secretary, Indian Red Cross Society), Civil Surgeon, Aligarh ; Lt.-Col. C. A. Sprawson, Principal and Professor of Medicine, King George's Medical College, University of Lucknow, in relief of Maj. G. T. Burke, who has been appointed Civil Surgeon, Saharanpur ; and Maj. P. B. Mills, Civil Surgeon, Shahjahonpur. Lt.-Col. H. P. Cook has been transferred as Civil Surgeon from Allahabad to Fyzabad, and Maj. R. S. Townsend, Civil Surgeon, from Bareilly to Gorakpur. Maj. C. G. Howlett, Civil Surgeon of Champaran, has been granted leave.

Parliamentary Intelligence.

HOUSE OF COMMONS.

WEDNESDAY, NOV. 25TH.

Milk and Dairies Regulations.

Mr. BARNES asked the Minister of Health whether, having regard to the fact that the Milk and Dairies Act of 1915 had been in operation since Sept. 1st last, he was now able to state the date on which the regulations to be operated under this Act would be published ; and whether in view of the scope of the sections of the Act under which it was proposed to issue regulations, he would arrange for a discussion in the House before putting the regulations into operation.—Sir KINGSLEY WOOD (Parliamentary Secretary to the Ministry of Health) replied : My right hon. friend is at present consulting the associations of local authorities with regard to a draft Milk and Dairies Order which has been prepared under the Act of 1915 and he hopes that the draft will be ready for publication about the end of the year. When the Order has been made it will be laid before the House and an address may be presented to His Majesty praying that the Order be annulled. A discussion could therefore take place on the Order on a motion for such an address.

Deaths from Lead Poisoning.

Mr. DUCKWORTH asked the Home Secretary if he was aware of the statements that deaths from lead poisoning were on the increase among lead workers in the pottery trade, and that according to the latest statistics potters between the ages of 35 and 45 had the highest death-rate in Great Britain ; and whether he had any information as to the effectiveness or otherwise of the new lead and dust regulations.—Mr. G. LOCKER-LAMPSON (Under Secretary for Home Affairs) replied : There has been a small increase during the last few years in the deaths from lead poisoning in the pottery trade, but this cannot be taken as any indication of the present conditions. The records show that in the great majority of cases the deceased had been employed in the industry for many years before the Regulations of 1913 came into force. There can be no doubt, I think, if one looks at the total number of cases, that the 1913 Regulations have been effective. Whereas during the six years 1907–1912 the average number of cases was 90, the average for the last six years 1919–1924 was just under 36. It is significant also that in the fatal cases there has been a substantial rise in the average age of the deceased. The statement that potters between the ages of 35 and 45 have the highest death-rate in Great Britain is, I believe, incorrect.

THURSDAY, NOV. 26TH.

Danger to School-children.

Mr. SCURR asked the Home Secretary whether his attention had been drawn to the danger to the public, especially children, of Vallance-road, Whitechapel, particularly where a school, a feeding centre, and a hospital converge ; and whether he would take steps to arrange for better regulation of the heavy traffic by the police, especially when the children were going to and from the school and the feeding centre.—Mr. LOCKER-LAMPSON replied : I am informed by the Commissioner of Police that the traffic in this street, as elsewhere, has greatly increased in recent years. Arrangements are made to secure that, as far as possible, police officers shall be on duty to supervise dangerous crossings in the vicinity of schools when children are entering or leaving, but owing to the large number of schools it is not always possible to spare constables for this purpose, having regard to the other duties of the police. In a densely populated neighbourhood where there are numerous children, and very few places where they can play, except in the streets, it is impossible for the police to prevent accidents occurring, and it does not appear that the posting of a constable at the spot indicated would have prevented such accidents as have unfortunately occurred of late.

The Causes of Epithelioma.

Mr. ROBINSON asked the Home Secretary whether the Departmental Committee on the association of the occupation of the mule minder in the cotton trade with epithelioma had yet reported ; and whether any action was proposed to minimise the incidence of this disease and protect the workers. —Mr. LOCKER-LAMPSON replied : The committee have not yet reported, but I am informed by the chairman that they hope to do so early in the New Year. As regards the latter part of the question, I cannot anticipate the report, but any recommendations of the committee will be taken into immediate consideration.

Deaths from Insect Bites.

Mr. HERBERT WILLIAMS asked the Minister of Health the number of deaths from insect bites in this country during the six months ending Sept. 30th this year, and also the corresponding figures for last year.—Mr. N. CHAMBERLAIN replied : There were nine deaths from insect bites in the six months ending on Sept. 30th, 1924. The corresponding figure for this year is not yet finally ascertainable.

Voluntary Hospitals Report.

Major GLYN asked the Minister of Health whether he had considered the Report of the Voluntary Hospitals Commission ; and whether it was proposed to provide public funds for hospital extension on the lines recommended. —Mr. N. CHAMBERLAIN replied : Yes, Sir. While I fully appreciate the strength of the case of additional hospital beds I regret that in the present urgent need for public economy I could not find myself able to recommend the provision of public funds to assist even in so laudable an object.

Sanitation in Kentish Hopfields.

Colonel DAY asked the Minister of Health if he was aware of the confusion and consequent suffering of hop-pickers in Kent during the recent hopping season ; and would he consider legislation on the lines of the Factory Acts in order to compel owners of hopfields to provide the accommodation required by modern ideas of humanity.—Mr. BRIANT asked the Minister of Health if he was aware that the sanitary condition of many of the hopfields during last season was deplorable ; what steps his department was taking to obtain a permanent improvement in the general conditions ; and would he appoint women inspectors to be on duty next season during the whole of the time that hop-picking continues. Mr. Briant also asked the Minister of Health if inspectors from his department had visited the hopfields during the past season ; and, if so, if the report made could be issued for the information of the House.—Mr. N. CHAMBERLAIN replied : I am aware that the conditions in many camps in the Kent and Sussex hopfields are unsatisfactory, and my department is working in close coöperation with the Ministry of Agriculture and Fisheries with a view to securing improvement. The administration of the law and by-laws relating to this matter is a duty devolving in the first instance on the local authorities, and their efforts, supported by local voluntary workers, have already effected a noteworthy improvement, but I have in preparation new model by-laws which the local authorities will presently be asked to adopt. In the last two years numerous visits have been made by inspectors, both of my department and that of my right hon. friend, including a lady inspector of the Ministry of Agriculture, and I propose to circulate among the local authorities concerned a report recently prepared by one of my medical officers dealing with those hopfields in Kent and Sussex which have been inspected. I shall be happy to send a copy to the hon. Members.

Poor-law Reform.

Mr. **GEOFFREY PETO** asked the Minister of Health whether he would issue to Members the outline of his proposals on the subject of Poor-law reform, which had already been issued to the County Councils' Association.—Sir **JOHN MARRIOTT** asked the Minister of Health whether, as his provisional suggestions or proposals for the reform of the Poor-law had been confidentially communicated to the Association of Municipal Corporations and one or more similar bodies, he would say whether they had also been communicated to the Association of Poor Law Unions; and, if not, if he would state the ground for discrimination.—Lieut.-Colonel **ACLAND-TROYTE** asked the Minister of Health why, when issuing a statement as to his proposed reform of the Poor-law to certain associations, no copy was sent to the Association of Poor-law Unions; and would he issue copies of the statement to Members of Parliament.—Mr. N. **CHAMBERLAIN** replied: The proposals referred to were preliminary proposals devised as a basis for discussion with the representatives of the local authorities to whom it would be necessary to entrust the powers and duties of boards of guardians on abolition, and I thought that it would probably save time and trouble if I considered the proposals further in the light of such discussion before forwarding them to the Association. I am now advised that some time must elapse before the discussion can take place, and accordingly I propose to send the provisional proposals as they stand to the Association and to certain other bodies interested. In this way the proposals will no doubt become public, and it seems scarcely necessary to issue them specially to Members of Parliament.

Advertisements of Cancer Cures.

Sir **JOHN MARRIOTT** asked the Minister of Health whether he had received representations from responsible quarters urging him to introduce legislation to deal with advertisements for cancer cures; and what action he proposed to take in a matter which was regarded by the medical profession as urgent.—Mr. N. **CHAMBERLAIN** replied: I have not received any recent representations, but the matter was fully discussed in the report of the Select Committee on Patent Medicines. The question raised by my hon. friend shall be carefully considered in connexion with any legislation for the control of the traffic in secret remedies.

Vaccination and Sleepy Sickness.

Mr. **COMPTON** asked the Minister of Health whether he would give instructions to all medical officers receiving notifications of cases of sleepy sickness to inquire whether such cases had at any time undergone vaccination and, in those cases where the operation had been performed, to note the date and result of the last vaccination.—Mr. N. **CHAMBERLAIN** replied: I will consider this suggestion in connexion with other questions relating to sleepy sickness which are at present engaging my attention.

Research into Animal Diseases.

Mr. **FOOT MITCHELL** asked the Comptroller of the Household, as representing the Minister of Agriculture, what steps were being taken by his department at the present time in the direction of research into animal diseases.—Sir H. **BARNSTON** replied: Research into animal diseases in England and Wales is carried on at a number of research institutes and colleges maintained or aided by grants from the Ministry. These include the Institute of Animal Pathology at Cambridge, the Royal Veterinary College, the London School of Hygiene and Tropical Medicine, and the Ministry's Veterinary Laboratory. Advisers in veterinary science are maintained at the University Colleges at Bangor and Cardiff, and at Armstrong College, Newcastle. A special committee had been set up to conduct research into foot-and-mouth disease, and work is being carried on under the direction of this committee at a number of laboratories. The total estimated expenditure on the maintenance of this work in the present financial year is £47,000. In addition grants in aid of capital expenditure totalling £118,650 have recently been sanctioned by the Ministry in respect of the work. Reports on the research organisation set up by the Ministry and on the work of the various bodies concerned will be found in the report on the work of the Intelligence Department of the Ministry for 1921–24 and the First Progress Report of the Foot-and-Mouth Disease Research Committee. These reports are published by and obtainable from H.M. Stationery Office.

MONDAY, NOV. 30TH.

Colonial Medical Director.

Lieut.-Colonel **ANGUS MCDONNELL** asked the Secretary of State for the Colonies whether the Government had come to any decision as to the appointment of a medical director as a permanent member of the Colonial Office staff for the purpose of coördinating medical research work in the different Crown Colonies.—Mr. **AMERY** replied: The matter is still under consideration.

The Spahlinger Serum.

Captain **BOWYER** asked the Comptroller of the Household, as representing the Minister of Agriculture, what steps he was taking to test Mr. Spahlinger's reputed cure for bovine and human tuberculosis, or whether the Ministry was already satisfied as to the efficacy of Mr. Spahlinger's sera.—Sir H. **BARNSTON** replied: The Ministry has not itself made any test of Mr. Spahlinger's serum, or of any other specific of which the basis is kept secret and not submitted to scientific inquiry. It understands, however, that an investigation into bovine tuberculosis is being undertaken by a committee representative of certain agricultural and professional interests in Cheshire, where tests are being conducted with the coöperation of Mr. Spahlinger.

Infant Mortality at Market Drayton.

Sir **CHARLES OMAN** asked the Minister of Health what was the rate of infant mortality per 1000 births for Market Drayton (Salop) for the first three quarters of 1925, or, if these figures were not yet available, for the first half-year of 1925.—Mr. N. **CHAMBERLAIN** replied: In the first two quarters of 1925 there were in the Market Drayton Urban District 52 births and 5 deaths of infants under 1 year of age, equivalent to a rate of 96 per 1000 births. Figures for the third quarter are not yet available.

Deaths from Tuberculosis.

Mr. **GROVES** asked the Minister of Health the number of persons who died in England and Wales from tuberculosis (all forms) during the years 1914 to 1924.—Mr. N. **CHAMBERLAIN** replied: The figures asked for are as follows: year 1914, 50,298 deaths; 1915, 54,295; 1916, 53,858; 1917, 55,934; 1918, 58,073; 1919, 46,312; 1920, 42,545; 1921, 42,678; 1922, 42,777; 1923, 40,788; 1924, 41,103; total, 528,661.

Destruction of Condemned Meat.

Colonel **DAY** asked the Minister of Health whether he was aware that the Eaton Bray Rural District Council, at their meeting on Sept. 12th last, decided to allow the carcass of a cow, deemed to be suffering from tuberculosis, to be boiled; and would he consider legislation with a view to the destruction of all condemned carcasses.—Mr. N. **CHAMBERLAIN** replied: I am aware of the decision of the rural district council, but I have no reason to suppose that the boiled meat was sold for human consumption. Having regard to the economic value of unsound meat for such industrial purposes as soap-boiling or pig or poultry feeding I should not be prepared to introduce legislation requiring the destruction of all condemned carcasses.

Trained Nurses for National Emergency.

Colonel **DAY** asked the Minister of Health whether it was contemplated appealing to hospitals and Poor-law institutions to supply a corps of trained nurses from the trained staff of such hospitals and institutions which could be used in case of national emergency.—Mr. N. **CHAMBERLAIN** replied: No, Sir. Steps are, however, being taken to secure that the additional nursing staff required on mobilisation by the combatant services should be obtained with a minimum of disturbance of the voluntary and Poor-law hospitals.

Arm-to-Arm Vaccination.

Mr. **GROVES** asked the Minister of Health whether he was aware that it was still the practice of many medical practitioners to employ the arm-to-arm method of vaccination in private practice; and whether, in view of the serious risks attending such practice, he would consider the desirability of making representation to the medical profession on the matter.—Mr. N. **CHAMBERLAIN** replied: The answer to the first part of the question is in the negative. My information is that comparatively few medical practitioners now employ this method of vaccination and I scarcely think it necessary to make representations to the medical profession on the matter.

DONCASTER INFIRMARY.—The accommodation at this infirmary is so inadequate that patients have had to be temporarily "bedded-down" in the receiving ward, and two children have had to occupy one cot. An extension is being built which will provide 70 extra beds. This will be the third enlargement in 20 years.

Medical News.

University of Cambridge.—There are at present 464 medical students in the University, of whom 157 are in their first year, which is about 30 more than the second- or third-year men. There are 127 in their second year, 122 in their third year, and 58 in the fourth or later year.

University of London.—At the examination for the Diploma in Psychological Medicine, held recently, the following two candidates passed, with special knowledge of psychiatry: Edward W. Anderson and George Brown.

Royal Commission on Lunacy and Mental Disorder.—The next meetings will take place at 5, Old Palace Yard on Dec. 10th at 2 p.m., and 11th at 10.30 a.m.

Old Epsomian Club.—The annual general meeting of this club will be held on Thursday, Dec. 10th, at 6.30 p.m., at the Trocadero Restaurant. It will be followed by the annual dinner at 7.30 p.m.

Tuberculosis Society.—A meeting of this society will be held at 1, Upper Montague-street, Russell-square, London, on Friday, Dec. 11th, when Dr. Otto May, principal medical officer of the Prudential Assurance Company, will speak on Life Assurance and Tuberculosis.

National Association for the Prevention of Tuberculosis.—Owing to the death of Queen Alexandra the dinner in aid of the National Association for the Prevention of Tuberculosis, which had been arranged for Dec. 9th, has been indefinitely postponed.

West Kent Medico-Chirurgical Society.—A meeting of this society will be held at the Miller General Hospital, Greenwich, S.E., on Friday, Dec. 11th, at 8.45 p.m., when Mr. Wilfred Trotter will deliver the Purvis Oration on the Surgery of Malignant Disease of the Pharynx.

New Health Society.—A luncheon will be given on Friday, Dec. 11th, at 1 p.m., by the Aldwych Club, at the Connaught Rooms, Great Queen-street, London, W.C., to the founders of this society, when Lord Oxford and Asquith, one of the founders, will deliver an address on National Prosperity and the Nation's Health.

Child-Study Society, London.—A meeting of this society will be held at the Royal Sanitary Institute, 90, Buckingham Palace-road, S.W., on Dec. 10th, at 6 p.m., when Dr. R. Langdon-Down will speak on the Teaching of Shorthand as Part of a General Education. Chairman, Dr. A. F. Tredgold.

Royal Society.—The anniversary meeting was held on Nov. 30th when the officers proposed by the Council (see The Lancet, 1925, ii., 1042) were duly elected. Sir Charles Sherrington, the retiring president, called attention to the receipt last year of a generous anonymous bequest of £10,000 which had been used in the investigation of kala-azar in Northern China by Major Patten and Dr. Hindle. A further bequest from the same source had been received this year, amounting to over £28,000. From the fund accruing to the society in 1921 by the bequest of Miss Foulerton, a further research professor had been appointed in the person of Prof. A. V. Hill.

Fellowship of Medicine and Post-Graduate Medical Association.—Sir Charles Gordon-Watson will lecture for the Fellowship of Medicine on the Prevention and Correction of Deformity in Tuberculous Joints in the Lecture Hall of the Medical Society of London, 11. Chandos-street, W., on Monday, Dec. 7th, at 5.30 p.m. The lecture is free to members of the medical profession.—The Hampstead General Hospital will hold a 4.30 to 6 p.m. course for the convenience of the general practitioner from Dec. 7th to 19th covering all branches of medicine and surgery.—Beginning also on Dec. 7th is a two weeks' afternoon course in Dermatology at the Hospital for Diseases of the Skin, Blackfriars. Instruction will be given in the out-patient department and venereal clinics will be held twice weekly.—The following are the special courses for January: Medicine, Surgery, and the Specialties at the Prince of Wales's General Hospital; Cardiology at the National Hospital for Diseases of the Heart; Diseases of Children at the Queen's Hospital; Infectious Fevers at the North-Eastern Hospital; Neurology at the West End Hospital for Nervous Diseases; and Psychological Medicine at the Bethlem Royal Hospital.—A copy of each syllabus and the Fellowship general course programme will be forwarded on application to the Secretary to the Fellowship of Medicine, 1, Wimpole-street, London, W.C. 1.

Harveian Society of London.—A meeting will be held at the Paddington Town Hall, Paddington Green, London, W., at 8.30 p.m., on Dec. 10th, when a paper on the Relationship of Certain Diseases of Animals to Mankind will be read by Prof. F. Hobday.

Centenarian Life Governor.—Mrs. Raby, of Bath, who recently sent a donation to Charing Cross Hospital on her 106th birthday, has, in recognition, been appointed a life governor of the hospital.

East London Children's Hospital.—Recently Sir Joseph Burn, the general manager and actuary of the Prudential Assurance Company, opened the new pathological laboratory which has been equipped at the expense of the company. The "Prudential" is also endowing six beds. The new electrical department for ultra-violet and X ray treatment was opened at the same time.

Queen Charlotte's Maternity Hospital.—The following post-graduate lectures will be given during January and February, at 5 p.m., at the hospital, Marylebone-road, N.W. Jan. 14th, Mr. A. W. Bourne: Maternal Mortality; 21st, Mr. J. B. Banister: Late Manifestations of Puerperal Sepsis; 28th, Mr. T. B. Davies: Ante-partum Hæmorrhage; Feb. 4th, Mr. L. C. Rivett: Infant Feeding; 11th, Mr. L. G. Phillips: Management of Contracted Pelvis; 18th, Mr. C. S. Lane-Roberts: Ectopic Pregnancy; 28th, Mr. L. H. W. Williams: Acute Abdominal Pain in Pregnancy.

Provision for Infectious Disease in Shropshire. Salop County Council is considering a suggestion by Dr. James Wheatley, the county medical officer, that the best method of making provision for infectious diseases would be the erection of a central hospital. At present there is no provision of this kind in districts with a total population of 146,000. Dr. Wheatley recommends the erection of a hospital, to be provided and managed by the county council, on a site near Hadley belonging to the East Shropshire Joint Hospital Board, where there is already good sewerage and water-supply.

Royal Institute of Public Health. — The Harben lectures will be delivered in the Lecture Theatre of the Institute, 37, Russell-square, London, W.C., by Prof. J. C. G. Ledingham, F.R.S., on Current Problems in Bacteriology and Immunology, and their Bearing on Public Health Effort, as follows: Lect. I.: Some Problems of Natural Immunity and Prophylaxis, Dec. 9th; Lect. II.: The Carrier Problem in Relation to Enteric Fever and Diphtheria, Dec. 10th; Lect. III.: Studies on Variola, Vaccinia, and Avian Molluscum, Dec. 11th, at 5 p.m. on each day. No tickets of admission are required.

An X Ray Victim.—Mr. Reginald G. Blackall, one of the early X ray workers at the London Hospital, who has suffered from X ray dermatitis for many years, died on Nov. 29th at the age of 44 years. He joined the staff of the London Hospital in 1902, at a time when the dangers of X rays to the operator were little realised, and has shared the fate of his colleague Mr. E. Wilson, who died, and Mr. E. Harnack, who lost both arms. Mr. Blackall had both his hands amputated in consequence of carcinoma. He continued to work after he knew of the danger, but was compelled to retire in 1920. Three years later the Carnegie Hero Fund Trustees awarded him an honorary certificate and a grant of £75 a year. Soon after, at a quarterly court of the London Hospital, Lord Knutsford presented him with the framed testimonial of the Hero Fund, and announced an award by the hospital of a pension of £285 a year and of a substantial life insurance for his wife and family.

Society of Medical Officers of Health.—The meeting of this society at the Medical Institute, Newcastle-on-Tyne, will be held on Friday, Dec. 11th, and not on the date previously announced The President, Dr. G. F. Buchan, will be in the chair, and there will be a discussion on Industrial Hygiene from the point of view of: (*a*) Public Health Administration, by Prof. Harold Kerr, M.O.H., Newcastle-on-Tyne; (*b*) The Physician, by Sir Thomas Oliver; (*c*) The Works Director, by Mr. Angus Watson, chairman of Messrs. Angus Watson and Co., Ltd.; (*d*) The Welfare Supervisor, by Mr. B. L. Lelliott, welfare supervisor, Messrs. Sir Jas. Laing and Sons, Ltd., Sunderland. The dinner of the Northern branch will be held at the close of the meeting, and members of other branches are invited to notify Prof. H. Kerr, Town Hall, Newcastle-on-Tyne, if they are able to attend. As branches have often expressed the wish that meetings of the whole society should be held from time to time in the provinces, it is hoped that there will be a large attendance, especially of members from the North of England and Scotland, at the Newcastle meeting.

REOPENING OF GOLDEN-SQUARE HOSPITAL.—Mr. Lionel de Rothschild last week reopened the in-patient department at the Hospital for Diseases of the Throat, Golden-square, which has been closed for two years during rebuilding and extension. The opening ceremony of the extension now reopened was performed by the Dowager Lady Rothschild in 1899. The cost of building and equipment has been £35,000, £4750 of which has been contributed by the King's Fund, in addition to £10,000 when amalgamation with the London Throat Hospital took place. The wards will now accommodate 75 patients, and there are two operating theatres. The late Queen Alexandra sent £50 to the building fund unsolicited.

ROYAL MEDICAL BENEVOLENT FUND OF IRELAND. The annual report of the Royal Medical Benevolent Fund Society of Ireland for the year ending April 30th, 1925, published a few days ago, shows an income from all sources of £2097. In this is included a sum of £422, the amount of income-tax refunded for two years. Of the remainder a sum of £1012 is from dividends and interest. It appears, therefore, omitting small items, that the income directly from subscriptions and donations is some £661. It must be admitted that this is a small sum for the practitioners of the whole of Ireland to contribute. There are some 3000 or more registered medical men practising in Ireland, and an average of 10*s.* each would not be an extravagant estimate of what they might be expected to contribute. In spite of its limited income the Committee appears to have done a great deal of charitable work during the year. Over 80 applications for assistance were granted and only five refused. Among those who were relieved were five medical men, most of the remainder being widows of medical men.

LIVERPOOL'S OPEN-AIR SCHOOL.—A contract for the erection at a cost of £41,690 of an open-air school, the first in Liverpool, has been sanctioned by the Liverpool Education Committee. The school will accommodate 1200 children and will be situated in Walton Hall Avenue. It will include three assembly rooms and domestic science rooms. There will be 12 square feet of floor space for each child over 12 years of age, which meant a considerable increase of cost. The cost worked out at £34 per child, or at least £10 per child higher than in other parts of the country. The school was strongly recommended by the medical profession and is an experiment in open-air teaching.

DAVID LEWIS EPILEPTIC COLONY, MANCHESTER.—At the annual meeting held at Manchester on Nov. 24th Dr. Alan McDougall, the director, emphasised the contrast between the indirect method of cure practised at the colony and the danger of the direct method practised at home. Dr. McDougall said, "Our experience confirms the faith always held at the colonies, but apparently unrecognised still, after 50 years, outside them, that you get better results and at the very least as high a proportion of 'cures,' if, instead of waging a violent war on fits with inadequate weapons, you act as though the fits were only a thing of secondary importance, and make your chief aim the moral and physical welfare of the patient. The direct method of treating epilepsy has been a steadfast failure for 2000 years. It insists on the patient being an invalid, and it produces, unless it is very quickly successful, appalling results. The broader visioning plan adopted at the colonies recognises that human beings who are prevented from being useful to the world degenerate morally; it recognises that the nature of the epileptic patient is ordinary human nature, and it gives him in addition to medicine an outlet for his human activities. A great obstacle to its use is found in the patient's friends." He pointed out that nearly 2000 patients had been admitted to the colony and most of these had benefited in health and happiness. A number had become free from fits and had returned to the ordinary world—a gratifying result, as nearly all the patients had been under treatment several years before admission to the colony. The daily average of colonists during the past year was 368, the highest on record. A new house for 32 children is being erected at a cost of £13,000.

LANCASHIRE AND SPAHLINGER TREATMENT OF TUBERCULOSIS.—On Nov. 27th about 250 representatives of insurance committees, health authorities, approved societies, along with the medical officers of health, tuberculosis officers, drawn from nearly every town and district in Lancashire, attended a meeting at Preston, called by the Lancashire Insurance Committee to hear addresses by medical men who have investigated this treatment. The chairman of the Lancashire Insurance Committee, Mr. J. W. Rawstron, presided. He said no resolution would be submitted, but the individual delegates would be left to convey the impressions they gathered to the bodies they represented, and he sincerely trusted some good would result. In a letter expressing his regret at his inability to be present Sir Alfred Mond wrote that he was heartily in support of the campaign to raise funds to purchase the Spahlinger Institute. Dr. Thomas Watts, M.P. (Withington), said that he and his colleagues who went to Geneva traced a definite 80 per cent. absolute recoveries, which was very different from 11 per 1000 in this country, and the cost would be something like one-fiftieth of our sanatorium treatment. A remarkable fact was that the results were being obtained by partial sera. Dr. Vernon Davies, M.P., said that after investigation the medical M.P.'s came to the conclusion that the results they had seen could only be described as marvellous, while if the records produced were genuine then the cases could only be described as miraculous. Dr. Leonard Williams said if Spahlinger could not go on and finish his work something of the utmost value would be lost to the world. Dr. Harry Jones, president of the Monmouth division of the British Medical Association, said a meeting of 83 doctors in his division had decided in favour of Spahlinger.

Medical Diary.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

Tuesday, Dec. 8th.

THERAPEUTICS AND PHARMACOLOGY: at 5.30 P.M.
Paper:
Dr. H. Gardiner-Hill: The Feeding of Anterior Lobe Pituitary Extract to Under-Developed Children.

PSYCHIATRY: at 4.30 P.M.
Clinical Meeting at the Bethlem Royal Hospital, S.E.

Thursday, Dec. 10th.

TROPICAL DISEASES AND PARASITOLOGY: at 5.30 P.M.
Papers:
Col. Sir Leonard Rogers: Small-pox and Meteorology in India: Forecasting Epidemics.
Dr. E. A. O. Travers: The Treatment of Leprosy at Kuala Lumpur, Federated Malay States (illustrated with lantern slides and photographs).

EPIDEMIOLOGY AND STATE MEDICINE: Members of this Section are cordially invited to be present.

NEUROLOGY: at 8.30 P.M.
Paper:
Prof. T. Graham Brown: The Physiology of Stepping and its Bearing on the Physiology of the Nerve Centre.

Friday, Dec. 11th.

CLINICAL: at St. Thomas's Hospital, S.E., at 5 P.M.
Demonstration:
Prof. MacLean: The Methods of Determining Renal Efficiency.
Cases:
Cases will be shown illustrating various endocrine disturbances, especially in relation to pituitary diseases.
Dr. Bernard Myers: Case of Splenectomy in a Child for Purpura Hæmorrhagica.

OPHTHALMOLOGY: at 5 P.M.
Clinical Meeting at St. Thomas's Hospital, S.E.

BIOCHEMICAL SOCIETY.
MONDAY, Dec. 7th.—5 P.M. (in the Biochemical Laboratory, Imperial College of Science and Technology, South Kensington). *Communications:*—H. W. Buston and S. B. Schryver: The Isolation of some further Undescribed Products of the Hydrolysis of Proteins. H. Martin and S. B. Schryver: The Action of an Electric Field on Egg Albumin. H. Chick: Sources of Error in the Biological Method of Investigating Fat-Soluble Vitamins. W. V. Thorpe: The Action of Enzymes on the Oxytocic Principle of the Pituitary. R. K. Cannan: Potentiometric Studies in Biological Oxidation Reductions. D. T. Harris: The Action of Light on Blood.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, London, W.
MONDAY, Dec. 7th, to SATURDAY, Dec. 12th. Fellowship of Medicine lecture, Medical Society, 11, Chandos-street, W. Monday, 5.30 P.M., Sir Charles Gordon-Watson: The Prevention and Correction of Deformity in Tuberculous Joints (illustrated by lantern slides).—INFANTS HOSPITAL, Vincent-square, S.W. Special Course, Lectures, and Demonstrations every afternoon. Friday, "Round Table" Consultation. Saturday, Visit to Blind Babies' Home, Chorley Wood.—ROYAL WATERLOO HOSPITAL, Waterloo-road, S.E. Special Course in Medicine, Surgery, and Gynæcology. Lectures, Demonstrations, &c., will take place in the Out-Patient Department and Wards.—WEST END HOSPITAL FOR NERVOUS DISEASES, 73, Welbeck-street, W. Lecture-demonstrations, illustrated by cases daily at 5 P.M.—HAMPSTEAD GENERAL HOSPITAL, Haverstock-hill, N.W. 4.30–6 P.M., General Practitioners Course dealing with Medicine, Surgery, and the Specialties.—HOSPITAL FOR DISEASES OF THE SKIN, Blackfriars-road, S.E. Afternoon course. Tuesday and Friday, 5.30 P.M., V.D. Clinic. All information as to fees, &c., from the Secretary.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N.

Thursday, Dec. 10th.—3 P.M., Dr. A. J. Whiting: Physical Diagnosis as illustrated by Cases in the Medical Wards. 4.30 P.M., Mr. N. Fleming: Iritis and Glaucoma.

Daily: In-patient and Out-patient Clinics in General and Special Departments, Operations, &c.

LONDON SCHOOL OF DERMATOLOGY, St. John's Hospital, 49, Leicester-square, W.C.

Tuesday, Dec. 8th.—5 P.M., Dr. W. Griffith: Eczema.
Thursday.—5 P.M. (lecture concluded).

QUEEN CHARLOTTE'S MATERNITY HOSPITAL, Marylebone-road, N.W.

Thursday, Dec. 10th.—5 P.M., Mr. L. Phillips: The Failed Forceps Case.

CENTRAL LONDON THROAT, NOSE AND EAR HOSPITAL, Gray's Inn-road, W.C.

Friday, Dec. 11th.—4 P.M., Mr. Harold Kisch: Cancer of the Larynx.

ROYAL INSTITUTE OF PUBLIC HEALTH, 37, Russell-square, W.C.

Wednesday, Dec. 9th.—4 P.M., Mr. Percy Hall: The Rôle of Light in the Prevention and Arrest of Disease.

MANCHESTER ROYAL INFIRMARY POST-GRADUATE COURSE.

Tuesday, Dec. 8th.—4.15 P.M., Mr. J. P. Buckley: The Significance of the Pathological Mesenteric Glands.

Friday.—4.15 P.M., Sir William Milligan: Modern Technique in the Diagnosis and Treatment of Foreign Bodies Impacted in the Food Passages.

JAMES MACKENZIE INSTITUTE FOR CLINICAL RESEARCH, St. Andrews.

Tuesday, Dec. 8th.—4 P.M., Principal Sir James Irvine: An address. Prof. Herring to open a discussion.

CHADWICK PUBLIC LECTURES.

Wednesday, Dec. 9th.—5.15 P.M. (in the Barnes Hall, Royal Society of Medicine, 1, Wimpole-street, W.), Dr. A. S. MacNalty: Encephalitis Lethargica (Sleepy Sickness) in England.

Appointments.

Blair, D., M.D. Glasg., has been appointed Superintendent of Prestwich County Mental Hospital by the Lancashire Asylums Board.

McFadzean, J., M.B., Ch.B. Glasg., Assistant Medical Officer, Colney Hatch Asylum.

Odgers, P. N. B., B.M., M.Ch. Oxf., Demonstrator in the Department of Anatomy, University of Oxford.

Williams, J. W., M.R.C.S., L.R.C.P. Lond., Medical Officer of the Penarth District of the Cardiff Union.

Medical Referees under the Workmen's Compensation Act (Additional): Miller, H., M.B., B.Ch. Glasg., and Stockman, R., M.D. Edin., for the Sheriffdom of Lanark.

Vacancies.

For further information refer to the advertisement columns.

Aberdeen Royal Infirmary, Treatment Centre.—Jun. M.O. £500.

Accrington, Victoria Hospital.—H.S. £150.

All Saints' Hospital, 49/57, Vauxhall Bridge-road, S.W.—Res. H.S. At rate of £200.

Birmingham Corporation Infectious Diseases Hospitals.—Sen. Asst. M.O. £500.

Birmingham, Queen's Hospital.—Anæsthetist. Obst. and Ophth. H.S. Also Cas. H.S. All at £70 to £100.

Bombay, Gokuldas Tejpal Hospital.—Hon. P. and two Hon. S.'s.

Bradford Royal Eye and Ear Hospital.—Res. H.S. £120.

Bristol, Southmead Hospital.—Second Asst. M.O. £200.

Cancer Hospital, Fulham-road, S.W.—H.S. At rate of £100.

Chester Royal Infirmary.—H.S. and Asst. H.S. £175 and £125 respectively.

City of London Hospital for Dis. of Heart, &c., Victoria Park, E.—P. to Out-patients.

Colchester, Essex County Hospital.—Asst. H.S. and Reg. £150.

Dreadnought Hospital, Greenwich, S.E.—H.P. and H.S. Each at rate of £110.

Dumfries and Galloway Royal Infirmary.—Sen. and Jun. Res. M.O.'s. At rate of £150 and £100 respectively.

Essex County Council and U.D.C.'s of Grays Thurrock and Tilbury.—M.O.H. for U.D. of Grays Thurrock. £200. M.O.H. for U.D. of Tilbury. £200. And Asst. County M.O. for U.D. of Grays Thurrock, &c. £400.

Fulham Parish.—M.O. of South District. About £250.

Great Yarmouth General Hospital.—H.S. £150.

Hampstead General and North-West London Hospital, Haverstock-hill, N.W.—H.S. and Cas. Surg. O. Each at rate of £100.

Kensington, Fulham, and Chelsea General Hospital, Richmond-road, Earl's Court, S.W.—Jun. Res. M.O. At rate of £75.

London Hospital, E.—Asst. Obstet. and Gynæcological S.

Metropolitan Asylums Board, Mental Hospitals Service.—Jun. Asst. M.O. £500. Also Second Assist M.O. £560.

North Middlesex Hospital, Edmonton, N.—S. in charge of Ear Dept. Three guineas per session.

Nottingham General Hospital.—Res. Cas. O. At rate of £200.

Queen Mary's Hospital for the East End, Stratford, E.—Res. M.O., H.P. Two H.S.'s. Obstet. H.S. H.P. And Cas. O.

Royal Free Hospital, Gray's Inn-road, W.C.—Surg. Reg. £200. Also Med. and Gynæcological Reg. £100.

St. Andrew's Hospital, Dollis Hill, N.W.—Hon. Asst. P. an Hon. Asst. Gynæcologist.

St. Peter's Hospital for Stone, &c., Henrietta-street, Covent-garden, W.C.—Clin. Asst.

Salisbury General Infirmary.—Hon. Ophth. S.

Scarborough Hospital and Dispensary.—Two H.S.'s. Each £126.

Sheffield Royal Infirmary.—Ophth. H.S. £80.

Sheffield Union Hospital.—Res. Asst. M.O.'s. £250.

Stepney Union, St. Peter's Hospital, Vallance-road, Whitechapel, E.—Med. Supt. £900. Also First Asst. M.O. £600. And Second Asst. M.O. £450.

Talgarth, Breconshire, Mid-Wales Counties Mental Hospital.—Asst. M.O. £350.

Tipton Urban District Council.—M.O.H. and Sch. M.O. £800.

Wigan Infirmary.—Third H.S. At rate of £150.

The Chief Inspector of Factories, Home Office, London, S.W., announces vacant appointments for Certifying Factory Surgeons at Kirkwall, Orkney, Stanmore (Middlesex), and Whitehaven (Cumberland).

Births, Marriages, and Deaths.

MARRIAGES.

Joynt—Warnock.—On Oct. 12th, at All Saints' Church, Srinagar, Kashmir, Major Herbert Fletcher Joynt, R.A.M.C., to Florence May, daughter of Mrs. Warnock and late Mr. Warnock, of Wallasey.

O'Byrne—Vigors.—On Nov. 25th, at St. Mary's Church, Hyson Green, Nottingham, Dr. Michael Dermod O'Byrne, to Kate Mary Vigors, widow of Captain C. H. Vigors, M.C., Croix de Guerre.

DEATHS.

Brown.—On Nov. 23rd, at Winckley-square, Preston, Lancashire, Sir Robert Charles Brown, Kt., M.B., F.R.C.P., F.R.C.S., aged 89 years.

Forman.—On Nov. 25th, at "Newmount," Chalfont St. Giles, Buckingham, Elijah Baxter Forman, M.D., J.P., formerly Alderman of the London County Council, aged 86.

Keith.—On Nov. 24th, at a nursing home, Southsea, after operation, Mrs. Caroline Keith, L.R.C.P. and S. No flowers by request.

Leventon.—On Nov. 25th, at Finchley-road, N.W., Julius Leventon, L.D.S. R.C.S.I., aged 50.

Molson.—On Nov. 28th, at Goring Hall, Worthing, suddenly, John Elsdale Molson, M.D., Major, R.A.M.C., T.D., late M.P. for the Gainsborough Division of Lincolnshire, aged 62.

Pedley.—On Nov. 25th, at India House, Addiscombe, Richard Denison Pedley, F.R.C.S. Edin., L.D.S., of Railway Approach, London Bridge, aged 68.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

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Situations Vacant and Wanted	

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Notes, Comments, and Abstracts.

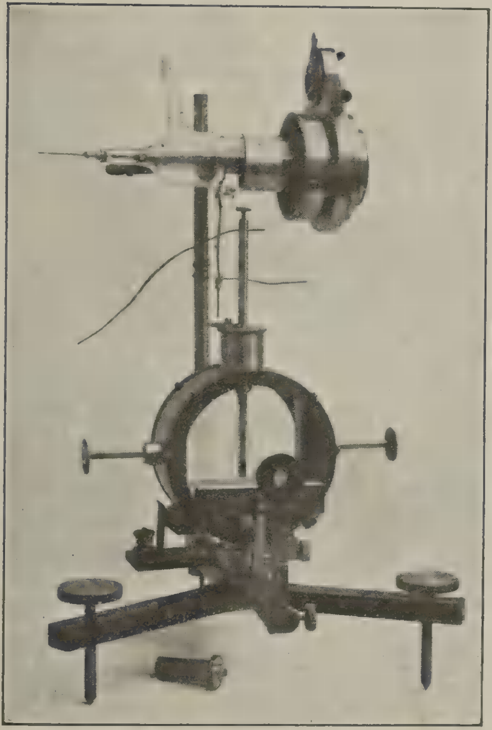
THE PHOTOMETRY OF THERAPEUTIC LAMPS.

AN INSTRUMENT FOR MEASURING ULTRA-VIOLET RADIATION, AND SOME APPLICATIONS OF THERAPEUTIC INTEREST.

BY HARRY D. GRIFFITH, B.A. CAMB.,
ASSISTANT IN NATURAL PHILOSOPHY AND CARNEGIE TEACHING FELLOW IN THE UNIVERSITY OF ABERDEEN;
AND
JOHN S. TAYLOR, M.B., CH. B., D.P.H. ABERD.,
ASSISTANT MEDICAL OFFICER OF HEALTH, CITY OF ABERDEEN.

THE instrument and methods herein described have been developed in order to provide a straightforward means of comparing the intensity of the ultra-violet radiation of lamps used for purposes of artificial sunlight treatment. Somewhat similar instruments have been devised by other investigators[1] [2] for meteorological purposes, but the technique given below is believed to be especially suitable for measuring the radiation of therapeutic lamps.

FIG. 1.



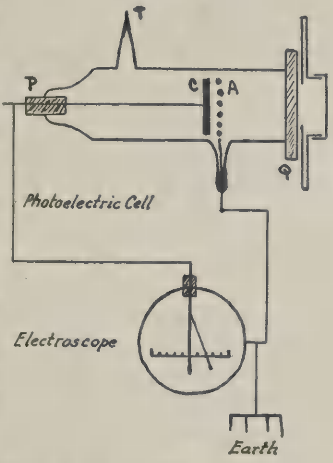
General View of Instrument for measuring Ultra-violet Radiation.

The essential principle of the method is the photo-electric effect discovered by Hertz and Hallwachs, on which a great body of physical research has subsequently been done. The results which emerge are that a metal plate, when illuminated by radiation of wave-length less than a certain critical value, emits electrons, so that if the metal be given a negative charge before illumination this charge is gradually lost during illumination. The "threshold" wave-length depends on the particular metal concerned. The loss of charge can be detected conveniently by means of a gold-leaf electroscope with its leaf connected to the metal plate. If the electroscope and the plate are charged to a negative pressure of, say, 200 volts, relative to the earth, the leaf will diverge. Then on illumination with light of any wave-length less than the threshold wave-length for the metal of the plate, the divergence gradually decreases till all the charge has leaked away. The rate at which the leaf falls is controlled by the rate at which leakage of electricity takes place from the illuminated plate, and this is dependent on the intensity of illumination. Detection of the small leakage current is also possible by means of a galvanometer, but this method is less convenient.

The results obtained tend to be variable unless the active plate (cathode) is protected from chemical change such as oxidation, and it is desirable therefore to enclose the plate in a vessel either evacuated or filled with some indifferent gas, preferably at reduced pressure. A second earthed electrode acting as an anode is provided to give the ejected electrons a definite route out of the cell.

In the application of these facts to the work under consideration, advantage is taken of the photo-electric properties of cadmium, which is insensitive to radiation of wave-length greater than 350 μμ, and of the fact that quartz absorbs waves shorter than about 200 μμ. A photo-electric cell with a cadmium cathode is employed, the cathode being illuminated through a quartz window. In this way a device is obtained actuated only by radiation of wave-length between 350 μμ and 200 μμ—that is, by the region of the spectrum comprising those radiations which are of greatest biological interest. (Figs. 1 and 2.)

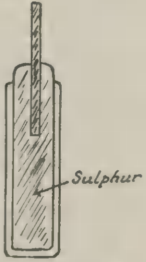
FIG. 2.



The electrodes of the photo-electric cell are mounted in a gas-tight manner in a glass vessel closed at one end with a flat quartz plate Q, through which the active radiation enters the instrument. The cadmium electrode C takes the form of a thin disc of the metal, 22 mm. in diameter, fixed to a copper support. This forms one of the electrodes, and since it is necessary to have it insulated from the glass of the cell in the most rigorous manner, it passes out through the quartz bush P. The anode A is a wide-mesh grid of fine wire placed 2 or 3 mm. from the cathode, and the incident radiation shines through the meshes of this grid on to the cadmium cathode. The seals are made with vacuum waxes of the usual type. After cleaning and fixing the electrodes the cell is evacuated as far as possible (to 0·001 mm. in this case) and tested for leaks over a period of several days. It is then filled with hydrogen or argon to a pressure of about 3 mm. mercury and sealed off at T.

The auxiliary gold-leaf electroscope is one of ordinary type in which the position of the leaf can be read off against a scale. The one used in these experiments has leaves 5 cm. long by 2 mm. wide, and gives a deflection of 12 mm. when the pressure between the leaf and the case is 220 volts. Very rigorous insulation of the support of the leaf is again necessary. Sulphur quartz or amber is required. The "natural leak" of the electroscope and cell together is less than 1 scale division per hour. A diaphragm of adjustable size is mounted in front of the cell and can be set so that the opening is of diameter 16, 8, or 4 mm., allowing the sensitivity to be controlled. It also carries a cap to cover the opening of the diaphragm when the cell is not in use.

FIG. 3.



Charging rod.

The instrument can be charged by touching the rod of the electroscope with the negative wire of the 220-volt direct current-supply, a safety resistance of 50,000 ohms being included to prevent risk of short circuits. Another method is by the charging rod shown in Fig. 3. This consists of a short piece of brass rod with a glass handle, insulation being obtained by means of a sulphur plug. Friction of the rod on the hair of the head electrifies it negatively, leakage of the charge being prevented by the sulphur. On touching the stem of the electroscope with the charged rod the leaves diverge with the necessary negative charge. This is a very convenient and reliable process if the sulphur be kept clean and not handled.

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[1] Elsterand Geitel, Physikolische Zeitschrift, 1914, xv., 1; 1915, xvi., 405.

[2] Dorno: Ibid., 1917, xviii., 381.

Experimental Procedure.

When in use the instrument is set up facing the lamp to be studied, and the diaphragm closed to its smallest aperture. A spot of light coming through the diaphragm will appear on the cadmium plate and the cell can be lined up till this is central. With the cap in position and the diaphragm opened to one of the standard sizes, the negative charge is given to the cell. On removing the cap the gold leaf will be seen to fall steadily if active radiation is present. Two suitable points on the scale are chosen within the travel of the gold leaf (in the instrument in use here, division 11 and division 7). A stop-watch is started by the observer when the leaf crosses division 11, and is stopped when it crosses division 7. This is equivalent to measuring the time which the active light takes to cause the leakage of a definite quantity of electricity from the cadmium plate. Several readings are taken as in the examples given later, and the average of these is used for computation.

Results Obtained with Instrument.

At the outset it may be said that when the research was started it was suspected that photo-electric cells of this description would probably deteriorate quickly with use, through "fatigue," contamination of vacuum, and other causes. These doubts have been found to be groundless. It seems that in the measurement of powerful ultra-violet sources to the accuracy aimed at (an error not in excess of 5 per cent.) these bogies of ordinary photo-electric photometry cause no trouble.

Inverse Square Law.

Other things being equal, the cell should give a leak proportional to the total energy of radiation between 350 $\mu\mu$ and 200 $\mu\mu$ entering it—that is to say, using a constant source and keeping the diaphragm to one size, the time of discharge through the standard range should be proportional to the square of the distance from the source. Measurements were made which verified the fact that this relation holds good for cells of the type described, so long as the time of discharge is greater than a certain small value.

Arbitrary Unit of Ultra-violet Intensity.

For the comparison of similar lamps, an arbitrary unit is used which depends on the dimensions of the particular cell used. The unit chosen was a lamp which, when placed 30 in. from the cell, causes the standard leak (division 11 to division 7 on the scale) to take place in nine seconds, the full aperture being used (22 mm.). When a lamp studied, D inches from the cell, discharges the standard amount of electricity in T seconds, the diaphragm opening being A, its power will be given by—

$$P = \frac{1}{100} \times \frac{D^2}{T} \times \left(\frac{22}{A}\right)^2$$

Thus, for the measurement of the power of a lamp, three quantities have to be known—the distance from lamp to cell, the size of aperture used, and a fair average value of the time of discharge.

Constancy of Cell.

The power, calculated by this formula, of a certain quartz-mercury arc as measured on different dates extending over a month was found to be satisfactorily constant: Sept. 27th, 18 units; Oct. 11th, 21 units; Oct. 18th, 23 units; Oct. 20th, 22 units; Oct. 22nd, 22 units. The simplicity of this technique compared with that involved in performing similar measurements with a spectrometer and bolometer or thermopile, or by a photographic method involving measurement of the density of a silver image, is apparent, though admittedly a more rigorous method of radiometry is necessary for the absolute calibration of the cell.

An important advantage of the instrument described here is that it is self-contained, robust, and portable.

Measurements on Carbon Arcs.—Solid Carbons.

The outstanding result which emerges from measurements made on carbon arcs is that the great bulk of ultra-violet radiation given out comes from the flame of the arc and not from the poles. Thus, in working with 75 ampère arcs, which have a tendency to flare, whenever a flare occurred an observer at the instrument some 40 ft. away saw the gold leaf *jump* downwards, sometimes a big flare making it drop as much as half a scale division.

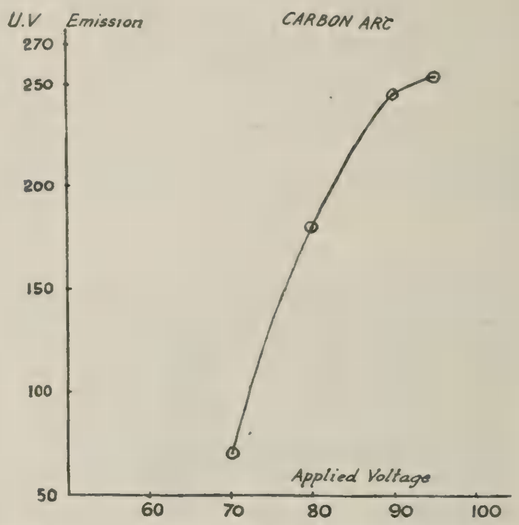
The emission with the carbon arc is, of course, not nearly so constant as that of the mercury arc. The crater tends to move round and round the carbons more or less rhythmically, with the result that the readings of the instrument go through corresponding cycles of maxima and minima. In the estimates of power given below regular readings during at least one complete cycle were obtained, so that the results given are considered to be fair average values of the effective power during an actual irradiation of patients. They were taken at the level of the arc at distances varying according to local conditions of some 20 to 40 ft. away.

The instrument is being adapted to make the averaging for fluctuations of intensity automatic by adding a condenser to it; the standard leak will then take 20 minutes or so to occur instead of 30 seconds, and the result obtained will represent the average power of the arc during the 20 minutes. It has to be noted that the fall of the leaf through the standard range means that a definite amount of ultra-violet energy has been delivered by the arc. It is anticipated that in this form the instrument will give a useful means of controlling dosage.

Variation of Ultra-violet Emission with Voltage.

The power of the 75 ampère arcs, having carbons of diameter 23 mm. and 30 mm., at the City Hospital, Aberdeen, has been measured, and its variations with varying input voltage have been determined. The results quoted below (see also Graph, Fig. 4) show that there is very great decrease of ultra-violet emission if the running voltage is allowed to drop some 10 or 15 volts.

Fig. 4.



Voltage.	Power.	Voltage.	Power.
70	70 units.	90	245 units.
80	180 ,,	95	253 ,,

This variation probably arises from the fact that a stable arc is shorter at low voltages than at high. There will thus be less flame, and what there is will be more shielded by the carbons if the applied voltage drops. Relative measurements of the emission of various types of carbon arcs have been made, and the emission has been found to depend largely on the construction and running conditions, a question which is being made the subject of further investigation. The results given below afford a rough guide to the power that may be expected, and refer in each case to arcs taking solid carbons. The effect of impregnation is to be studied later.

15 amp. type	Power, 12 units.
25 ,, ,,	,, 60 ,,
75 ,, ,,	,, 156 ,,

These results are in general agreement with those obtained by Lindemann [3] working with smaller arcs under carefully controlled laboratory conditions.

A set of typical readings are given below.

75 Ampère Carbon Arc.

Distance from arc to cell	420 in.
Diameter of diaphragm	15 mm.
Running voltage	77 volts.
Time of discharge (secs.)	Div. 11 to div. 7.

15·0	Effect of a flare	Average time, 24·5 secs.
38·0	Arc feeding itself	
21·8		
22·0		
21·2		
25·0		
22·6		
18·2	Effect of a flare	
27·4		
29·2		
28·8		

$$\text{Power of arc} = \frac{1}{100} \times \frac{D^2}{T} \times \left(\frac{22}{A}\right)^2 = \frac{1}{100} \times \frac{420^2}{24{\cdot}5} \times \left(\frac{22}{15}\right)^2$$
$$= 156 \text{ units.}$$

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[3] Lindemann: Annalen der Physik, 1906, xix., 807.

The relative steadiness of the mercury arc is shown by the following readings :—

3 Ampère Mercury Arc, Type A.

Distance from arc to cell	89 in.
Diameter of diaphragm	8 mm.

Time of discharge (secs.) :—

26·2	26·2	Average time, 26·5 secs.
25·8	26·6	
26·2	26·6	
26·6	26·6	
26·8	26·2	
27·0	26·4	

Hence power of lamp, 22 units.

Measurements on Mercury Arcs.

Two types of mercury arcs have been investigated, an "atmospheric" type with tube length 5 cm., diameter 14 mm., taking 2·2 amps. at 100 volts across the tube ; it has a hemispherical white enamel bowl above it. This will be referred to as lamp A.

Lamp B is a vacuum type lamp, tube length 8 cm., diameter 15 mm., taking 2·8 amps. at 156 volts across the tube. It has a hemispherical polished metal bowl behind it.

Measurements have been made of the powers of both lamps. A typical series of measurements for lamp A has been given above. The small variations are assigned to slight alteration of arc length or supply voltage. They are even less in the case of lamp B.

Power of mercury lamp A	20·9 units.
,, ,, B	57 ,,

These measurements were made with the cell on a horizontal line from the lamp perpendicular to the tube length, the bowls being tilted to expose the quartz tubes completely. Thus the ultra-violet emission of B was about three times that of A.

Measurements have also been made of the distribution of ultra-violet energy round lamp A.

Along horizontal line perpendicular to tube length	20·9 units.
Along horizontal line at 45, perpendicular to tube length	14·7 ,,
Along line sloping downwards at 45, perpendicular to tube length	19·8 ,,
Vertically under lamp	32 ,,

Measurements are in progress of the effect of the bowl-shaped reflector in focusing the ultra-violet energy, and of the effect of voltage variation on the ultra-violet output.

General Considerations.

Another fact which requires consideration is that the instrument gives a directly valid comparison of the powers of sources of a similar nature—e.g., of two different sizes of carbon arcs, or of two types of mercury arcs. In comparing a carbon arc with a mercury arc, however, one other factor has to be taken into account, since the mercury arc is relatively richer in short waves than the carbon arc, in the region to which the instrument is sensitive. This is the usual difficulty of heterochromatic photometry, exactly analogous to the difficulty of comparing a lamp of bluish tint with a yellowish one ; to settle this point it is necessary to know how the sensitivity of the measuring instrument varies with the wave length. Preliminary tests have shown that the sensitivity of the instrument to different wave lengths in the band of the spectrum to which it responds (350 μμ to 200 μμ) is not far from uniformity. This detail is being investigated at present, but meanwhile it is not considered to be of great practical importance, at any rate until the problem has been solved as to what are the relative biological effects of the same amounts of ultra-violet energy applied in the form of mercury arc radiation, and of carbon arc radiation respectively.

It is interesting to note that a sheet of window glass held in front of the diaphragm stops all leak as completely as does the cardboard cap of the instrument, thus showing conclusively that only waves shorter than about 350 μμ actuate the instrument.

A further form of the apparatus is in use, in which the photo-electric leak across the cell is balanced by adjusting a resistance which allows current to flow in, so as just to neutralise the leak. The variable resistance, which must be of the order of 10 million megohms, takes the form of a thermionic valve with a very small quartz-insulated anode. In using this type, all that is required is simply to set the resistance till the gold leaf is stationary. Then the intensity of ultra-violet illumination is read off directly from the setting of the instrument, instead of indirectly from observation of the fall of the leaf, as in the first type described.

The work described above has been done by collaboration between the Natural Philosophy Department of the University of Aberdeen and the Health Department of the City of Aberdeen. The authors desire to express their indebtedness to Prof. Thomson for giving the use of the facilities of his research department, and for advice and criticism during the course of the work.

COLONIAL HEALTH REPORTS.

UNFEDERATED MALAY STATES.

Johore.—Mr. H. Marriott, General Adviser, in his report on this State for 1924 states that on an estimated population of 317,317 the birth-rate was 38·75 per mille and the death-rate 26·07 per mille. The infantile mortality for the year was 182·90 per mille, compared with 196·28 in 1923. The territory was again entirely free from cholera. There were 3 cases of plague and 2 of cerebro-spinal meningitis, all fatal ; 29 cases of chicken-pox and 205 of measles (including German measles) were reported ; there was 1 death from measles. Of small-pox there were 8 cases, all of which recovered ; and of influenzal pneumonia 6 cases, with 4 deaths ; 58 cases of enteric fever were recorded, with 16 deaths. There were 1798 cases of ankylostomiasis, with 68 deaths ; 677 cases of beri-beri, with 63 deaths ; 3 cases of blackwater fever (1 death), and 1810 of dysentery and diarrhœa (215 deaths). 12,514 cases of malarial fever were treated in Government and estate hospitals, and the percentage of deaths to total treated was 2·85, against 3·28 in 1923. 446 deaths were registered as being due to phthisis. The number of patients in the mental hospital at the end of the year was 176. Lepers in the Johore Leper Asylum numbered 70. All female lepers are transferred to the leper camp at Singapore. Admissions to the Government hospitals during the year were 15,987, and the number of attendances on out-patients at the various stations was 62,421. Johore Bahru showed the highest rainfall for Government stations, 126·72 inches, and the lowest was 76·74 at Batu Pahat. Temperature variations were not so great as during the previous year, there being a difference of 24 degrees between the highest maximum, 91 (Tangkuk), and lowest minimum, 67 (Kukub). Dr. R. D. Fitzgerald was confirmed as principal medical officer.

Kelantan.—The report for 1924 is signed by Mr. H. C. Eckhardt, Acting British Adviser. The total population at the 1921 census was 309,300, of whom 286,363 were Malays, mostly born in Kelantan. Of 12,000 Chinese, half were born in Kelantan, as were practically all of the 6000 odd Siamese. There were 34 admissions to the European hospital, and 2 deaths. In the native hospital at Kota Bharu there were 88 patients on Jan. 1st, 1924 ; 2059 patients were admitted during the year, and there were 35 deaths. The main ailments treated were malaria (274 cases), syphilis (163), yaws (346), ulcers (181), ankylostomiasis (123), beri-beri (4), and phthisis (69). In the cases of yaws very satisfactory results were obtained by the use of novarsenobenzol. The isolation camp at Kota Bharu was used for the isolation and treatment of phthisis and chronic bowel complaints ; there were 94 admissions and 36 deaths. There were 6 lepers in the leper camp at Kota Bharu at the beginning of 1924 ; 7 were admitted during the year, and 3 absconded. Treatment with sodium hydnocarpate and Heiser's Philippine formula, and the internal administration of cod-liver oil were actively carried out. As a result 2 cases were discharged with no outward signs of the disease and no microscopical findings of *Bacillus lepræ*. The new hospital at Kuala Krai was completed with accommodation for 50 patients. The number of out-patients treated at Kota Bharu was 24,153, at Kuala Krai 9384, at Tumpat 8928, at Pasir Futeh 6465, and at the Federated Malay States railways hospitals 9663. Travelling dispensers visited market-places and various kampongs at regular intervals, and treated 7057 children. A special hookworm campaign was carried out in Ulu Kelantan. It was well organised and most successful ; 7030 cases were treated with carbon tetrachloride. Twenty-three sporadic cases of choleraic diarrhœa, with 12 deaths, were reported from various villages. There was 1 fatal case of cholera. The health on estates was good. The routine medical inspection of estates was thoroughly carried out by Dr. W. J. Geale, medical officer at Ulu Kelantan. Dr. J. R. McVail was in charge of the medical department during the whole of the year, and Dr. Lim Shin Thwin assisted when necessary in Kota Bharu.

COLLOIDAL GOLD IN THE TREATMENT OF ALCOHOLISM.

To the Editor of THE LANCET.

SIR,—I note with interest in your issue of Nov. 28th that Dr. Bousfield confirms the value of colloidal gold in the treatment of alcoholism. I have used colloidal gold for six years (THE LANCET, 1922, i., 691, and 1924, ii., 491) and the longer I use it the more certain I am of its value. Dr. Bousfield uses atropine, a drug which I seldom found of use ; generally, in fact, the reverse, and I stopped using it several years ago. Why colloidal gold should be of such value in these cases one does not at the present know.

I am, Sir, yours faithfully,

STANFORD PARK,
Resident Medical Superintendent, Bay Mount,
Paignton, S. Devon.

Nov. 28th, 1925.

THE SHIPPING EXHIBITION AT OLYMPIA.

THE Shipping, Engineering and Machinery Exhibition held during the past fortnight at Olympia illustrated in a hundred ways the improvements being made on the material side of the business, but few devices to help the personnel were in evidence. One might look in vain for models of improved forecastles, or for examples of baths, lavatories, or water-closets, and there were surprisingly few ventilation exhibits. It appears that it pays a man to instal an expensive centrifugal extractor to recover oil from oily rags, but that to make it easier for the man who makes the rags oily to get the oil off himself is not a business proposition. In the long run, that is a mistaken view. One promising ventilating system is shown, the "Kelvite," with a quiet fan in each cabin regulated by a four-way switch: on, cold air; on, low heat; on, full heat; off. The indriven air is warmed as and if required, and the heating coils only function when the fan is running. It is claimed that air trunking is not needed, only a single shoot to the deck, and if that is found true in practice, ventilation of ships will become easier. The same firm (Kelvin, Bottomley, and Baird) exhibited an ingenious piece of apparatus, the size of a large thermos, for estimating the carbonic acid in furnace gases, giving the required figure (in percentage or parts per 10,000) in two minutes by a direct reading. The cost (£17) may put it out of reach of enthusiastic surgeons on ships. There was one beautiful instrument which, it is hoped, may abolish sea-sickness. This gyroscope, manufactured by the Sperry Company, has already performed feats almost as miraculous as that of keeping the ship on an even keel, and we wish it all success.

RADIANT HEAT IN OCULAR INFLAMMATION.

Dr. A. P. Schultz, of Brooklyn, sends us a reprint from *Solidarity* describing the relief afforded by intense dry radiant heat in his own case when he was suffering from iritis-keratitis. Before he tried this physical remedy he had obtained some mitigation of his pain from atophan in daily doses of 45 gr. combined with local treatment by dionin and thiosinamin; but from the moment of its application radiant heat relieved pain and later, he is sure, helped to clear up corneal infiltration. There is, we might add, nothing very new in this use of dry radiant heat; the late Mr. R. W. Doyne wrote a paper describing the treatment in the Transactions of the Ophthalmological Society for 1900. But Dr. Schultz's testimony is striking confirmation.

THE GREAT PLAGUE IN LONDON.

IN the *Journal of the London Society* for November is an account of the Great Plague of London in 1665, by Mr. W. G. Bell, F.S.A. The map accompanying the paper shows how the mortality varied from district to district, but was less in the walled city, concentrating on the poorer inhabitants of the jerry-built slums outside the walls, Aldgate, Bishopsgate, and Moorgate. Mortality was also high about Westminster Abbey. The outbreak began in the ward of St. Giles-in-the-Fields (about the spot where New Oxford-street and Charing Cross-road now join). It was intense in the west in July, gradually spread east, and reached its peak there in September. Burial was a difficulty, some churchyards became so overcrowded as to raise their level two or three feet above that of the neighbouring streets—as may still be seen—and plague pits were opened, the nearest in Aldgate. Infection was supposed to spread through the air or from the soil, hence people stuffed the keyholes of their doors to exclude the outer air, and they killed cats and dogs which might have helped to keep infection at a distance. The Great Fire in the next year burned out the walled city, but did good to the slums outside, by making way for better buildings and better sanitation in the areas which it cleared.

DRUG SMUGGLING.

IMPORTANT seizures of illicit drugs in the Straits Settlements, totalling nearly 300 lb. of morphine hydrochloride, have been reported to the League of Nations by the British Government. The drugs were shipped from Antwerp to the Far East, but were intercepted at Singapore. The following is a typical story:—

> On the arrival of the ss. *Haruna Maru* from Europe on May 25th, a party of revenue officers went on board and examined a consignment of seven casks which were declared to contain carbolic acid. Six of the casks were standing on end with the marks downwards, but the seventh, which was right end up, was opened first and found to contain 63 lb. of morphine hydrochloride. The other six casks contained carbolic acid as declared. The casks were similar to beer casks and held about 50 gallons each. On examination it was found that inside each cask was a smaller rough wooden cask containing a large tin packed in sawdust. In the case of the six genuine casks, these tins, which were cylindrical, had circular soldered lids at the side of the upper plane surface, as in kerosene oil tins, and were filled with solidified carbolic acid. In the case of the seventh cask, the tin was larger and the "lid" was not soldered down but could be prized open. When this lid was removed it appeared that this tin also was filled with carbolic acid. Further examination, however, showed that the acid was confined in a small compartment about 7 in. in diameter, soldered to the upper surface round the "lid." The outer tin was then cut open and found to contain a smaller tin packed around with sawdust and about 150 lb. of sheet lead, evidently put in to make up weight, and its contents were 63 lb. of pure morphine hydrochloride. The master of the ship was fined $1000 and the seven casks confiscated.

The Secretary-General of the League has sent to the Powers having extra-territorial rights in China a copy of a resolution adopted by the League's Advisory Committee in August last and approved by the Council, to the effect that those Powers "should, if they have not already done so, make regulations, the breach of which shall be punishable by adequate penalties, to control the carrying on by their nationals in China of any trade in the drugs to which Chapter III. of the Opium Convention applies."

DIRECT INJECTION OF ADRENALIN INTO THE HEART FOR ARREST DURING ANÆSTHESIA.

To the Editor of THE LANCET.

SIR,—In the following case the heart and respirations ceased and revived again after the injection of adrenalin into the heart. The case shows some variation from the two reported in THE LANCET (1924, ii., 746).

The patient was a healthy young woman suffering from sterility, and I was about to dilate the cervix and curette her. The assistant had some difficulty in giving the chloroform, and must have dropped too much on the mask, for while I was waiting to begin I discovered that the patient had stopped breathing. Her pulse could not be felt, and no heart sounds were heard. I immediately started artificial respiration, and gave hypodermics of strychnine, pituitrin, and camphor in oil. There was no reaction, and the cornea looked glazed. I then injected adrenalin through the fourth space into the heart, and heart and lungs responded at once; there must have been at least five minutes interval since they had ceased acting. After waiting a few minutes, during which the patient vomited slightly, I quickly did the operation, and before it was over she began to show some signs of feeling pain. Within half an hour she was round, and able to speak, and she had no trouble of any kind afterwards. When I saw her several hours later in the evening she was very bright and had already taken food.

In the cases previously reported the patients did not recover consciousness for a long time, but my patient came round just in the same manner as any ordinary operation case does.—I am, Sir, yours faithfully,

Quetta. E. G. STUART, M.B. Lond.

PATHOLOGICAL AND BACTERIOLOGICAL LABORATORY ASSISTANTS' ASSOCIATION.

THIS Association was founded in 1912 with the object of improving the status of the laboratory assistant by raising the standard of technical knowledge through the medium of an educational programme culminating in examinations for certificates of proficiency in laboratory technique.

The Association consists of: (*a*) life members; (*b*) honorary members, limited to 20; (*c*) registered members who possess one of the Association's certificates of proficiency; (*d*) ordinary members 21 years of age and over with three years' training in a recognised pathological or bacteriological laboratory; and (*e*) junior members under 21 years or with less than three years' experience. There are at present 102 registered, 158 ordinary, and 97 junior members, who are organised in branches throughout Great Britain. The governing Council of the Association consists of the president, who must be a member of the Pathological Society of Great Britain and Ireland, the vice-president, certain officers and divisional representatives elected by the members.

The ordinary meetings of members are arranged by the branches and are largely educational in character. To encourage the systematic teaching of the junior members, lectures and classes in the technique of pathology and bacteriology are conducted by members of laboratory staffs and by senior members of the Association. General meetings are held from time to time; a congress lasting five days for the discussion of papers and exhibition of methods and specimens was held in Edinburgh in 1924, and another will be held in Cambridge in 1927. An official organ—*The Laboratory Journal*—is issued to members quarterly; in addition to Association news it contains original articles and abstracts of technical interest to laboratory workers. There is an employment bureau and notices of vacancies are sent to members who register. The examinations are held annually in July in London and other convenient centres. The Secretary of the Association is Mr. H. P. Hudson, Panama Villa, Trumpington, Cambs.. and the Overseas Corresponding Secretary is Mr. W. J. Muggleton, 82, Chapter-road, London, N.W. 2.

Schorstein Memorial Lecture

ON

LYMPHADENOMA

(HODGKIN'S LYMPHOGRANULOMA).

Delivered at the London Hospital on Dec. 4th, 1925,

BY SIR HUMPHRY ROLLESTON, BART.,
K.C.B., M.D. CAMB.,

REGIUS PROFESSOR OF PHYSIC IN THE UNIVERSITY OF CAMBRIDGE; PRESIDENT OF THE ROYAL COLLEGE OF PHYSICIANS OF LONDON.

THE honour of giving the Schorstein lecture is a welcome opportunity of paying a brief tribute to a contemporary of peculiar charm and broad culture whom I first met at a small class in the late 'eighties, held by the late E. E. Klein, on the then recently recognised subject of bacteriology.

HISTORY AND NOMENCLATURE.

Morgagni (1769) briefly noted the condition, and no doubt there are other early records of the morbid change, but Thomas Hodgkin (1798–1866), demonstrator of morbid anatomy at Guy's Hospital (1825–37), is usually regarded as its sponsor. In 1832 he described "Some Morbid Appearances of the absorbent Glands and Spleen," recording six cases of his own and one of Sir Robert Carswell's. How many of these can be accepted as definitely examples of the disease now called after him it is rather difficult to decide; Samuel Wilks excluded two of the six original cases, but later critics have been more drastic; for example, Dorothy Reed and Symmers accepted two only of the seven. Except for a reference in Bright's lectures on Abdominal Tumours, Hodgkin's paper did not attract any attention, and probably would have remained unnoticed but for the loyal action of his junior, Samuel Wilks, who, in the course of a paper "On Cases of Lardaceous Disease and Some Allied Conditions," in 1856 included an account of a "Peculiar Enlargement of the Lymphatic Glands," which, though not lardaceous, was described because it is either a variety of it or closely akin to it. This is interesting as amyloid disease occasionally complicates Hodgkin's lymphogranuloma, though not so commonly as does tuberculosis which several writers have regarded as its underlying cause. After this paper was completed, but before it was finally printed, Wilks found that Hodgkin had described some of the cases actually in his series, and being one of the editors of *Guy's Hospital Reports* added a paragraph to say that had he been aware of this some of the statements pointing to the originality of his observations would not have appeared. In 1865 he collected 15 cases and perpetuated Hodgkin's name by calling them after him; this was just before Hodgkin's death from dysentery at Jaffa in 1866 and long after he had ceased to be connected with the hospital.

In the meanwhile, Virchow (1864) had described the disease from a pathological point of view as lymphosarcoma, an unfortunate name, as it is often used for a special form of an undoubtedly malignant growth. Cohnheim, in 1865, used the term pseudo-leukæmia for cases in which the glands showed the histological picture of leukæmia without the corresponding blood change, or as it would now be called aleukæmic leukæmia or aleukæmic lymphadenosis. The names lymphosarcoma and pseudo-leukæmia have caused much confusion, but at this long interval of time it is not difficult to be wise. In the same year (1865) Trousseau gave one of his famous clinical lectures on *adénie*, a name which in the following year was expanded into lymphadenoma by Wunderlich, the title of whose paper is worth quoting in full as an epitome of the foregoing sentences—"Pseudoleukämia, Hodgkin's Krankeit oder multiple Lymphadenome ohne Leukämia." Cornil and Ranvier (1869) adopted lymphadenoma, and apparently it thus came to the notice of Murchison, who introduced it at the Pathological Society in 1870. But recently Agasse-la-font has drawn a distinction between Trousseau's adénie and Hodgkin's disease or lymphogranulomatosis.

From its familiarity and recognised meaning in this country the term lymphadenoma is the most convenient, but etymologically it is a little ambiguous, as it is not clear whether it implies a tumour of lymphadenoid tissue (lymphaden-oma) or, on the analogy of other adenomas, an innocent growth (lymph-adenoma), and also because it quite definitely suggests that it is a neoplasm, just as the alternative names, recently in vogue, lymphogranulomatosis, lymphomatosis granulomatosa, and granulomatosis, which some prefer, as the lesion is not necessarily confined to lymphadenoid tissues, declare it to be an infectious granuloma. From an international point of view, however, "lymphadenoma" has the drawback of being used by some writers, especially the French and by Ewing (1923), and Fox and Farley in America, for conditions, such as lymphoma and hyperplastic lymphadenitis, different from Hodgkin's disease; lymphogranulomatosis benigna has been applied to Boeck's sarcoid of the skin and allied conditions (Schaumann), and malignant lymphadenoma and lymphogranulomatosis maligna or perniciosa has been used as a synonym for Hodgkin's disease.

The eponymous title, Hodgkin's disease, has the advantage of avoiding any hypothesis as to its nature, but it might be thought that as Sir Samuel Wilks was really instrumental in its recognition, it should in justice be called Hodgkin-Wilks disease. The name Hodgkin's lymphogranuloma, used for 17 years by Prof. H. M. Turnbull and also employed by Ewing, has much to recommend it as leaving no doubt as to what is meant. In what follows the names lymphadenoma, Hodgkin's disease, and Hodgkin's lymphogranuloma will be used as synonymous.

The *history of the histology of lymphadenoma* is of some interest. The credit of first describing the lymphadenoma cells and the other features in the glands has been variously ascribed in different countries to native workers on account of want of familiarity with the work of foreign observers. In 1864, the year before Sir Samuel Wilks made Hodgkin's name immortal by attaching his name to the disease, Virchow described the large multinuclear or "lymphadenoma cells" which subsequent observers, among them Langerhans (1872) and C. Sternberg (1898), also noted, so that the cells are sometimes called after these later pathologists.

In 1878, in the course of a debate on lymphadenoma and allied conditions, W. S. Greenfield described "a large number of multinuclear cells containing from 4 to 8 or 12 nuclei," with a drawing which, though quite forgotten, was recognised in 1902 by Butlin as quite characteristic; though he never published any further account, Greenfield had fully worked out the histological appearances and had been accustomed to give them in detail to his Edinburgh students (S. MacDonald). In 1892 Goldmann pointed out the local eosinophilia in lymphadenomatous glands. But the characteristic microscopic appearances of lymphadenoma were not generally recognised until F. W. Andrewes gave a full account of the histological appearances independently of and practically synchronously with Dorothy Reed's similar description.

NATURE OF HODGKIN'S LYMPHOGRANULOMA.

Four views as to the nature of Hodgkin's lymphogranuloma may be mentioned—namely, that it is (1) an atypical form of tuberculosis, (2) a specific infective granuloma of unknown nature, (3) a new growth, and (4) a transition between a granuloma and a new growth.

(1) *The relationship of lymphadenoma and tuberculosis* has long been discussed. Some of Hodgkin's original cases were almost certainly tuberculous, and even now to the naked eye the large-celled tuberculous hyperplasia of the lymphatic glands is often indistinguishable from lymphadenoma. In 1898 Carl Sternberg, of Vienna, considered that lymphadenoma was a special form of tuberculosis, just as lupus is of cutaneous tuberculosis, and hyperplastic tuberculosis of the cæcum and appendix a peculiar form of intestinal tuberculosis; he obtained evidence of tuberculosis in 10 out of 15 cases; but this was opposed on the ground, dimly foreshadowed by W. H. Dickinson in 1878, that the tuberculous invasion was a secondary process which the existing lymphadenomatous lesion favoured. Inoculation experiments were found to give varying results, sometimes positive, sometimes negative (Andrewes; Reed; Longcope), and it appears that the positive results were due to a mixed infection, and the negative to uncomplicated lymphogranuloma. This interpretation seems convincing, but it has not been accepted universally; Ewing, with the weight of special experience, considers the evidence in favour of tuberculosis somewhat formidable.

In 1910 Fraenkel and Much, using the antiformin method, described a granular form of the tubercle bacillus which they found in 11 out of 12 lymphadenomatous glands free from the structural changes characteristic of tuberculous adenitis, and considered that in addition to this organism some special constitutional anomaly was necessary to account for the lesions. Dr. Negri and Micremet, in 1913, described a similar organism, and in 1923 Fraenkel and Much, employing a special technique, found their form of the tubercle bacillus in nearly all the cases they examined. Almost simultaneously Kuczynski and Hauck described a mycelial form in the multinuclear cells, an observation which appeared to fit in with the tuberculous origin, but this has not been confirmed by Sternberg. In 1924 Grumbach obtained a bacillus resembling Fraenkel and Much's by blood culture from a patient with the relapsing fever of Pel-Ebstein. Lukes and Jelinck, however, found Much's granules in three out of 11 persons without either tuberculosis or Hodgkin's lymphogranuloma.

It has been urged in favour of the tuberculous nature of Hodgkin's disease that the cases may terminate in generalised tuberculosis; this had not been common in my experience, but its occurrence might be explained by the view that the presence of Hodgkin's lymphogranuloma favours tuberculous infection or activates it when latent.

(2) *A Specific Infection.*—Various organisms have been described as responsible for Hodgkin's lymphogranuloma, but none of them can be regarded as proved. The most attractive is a protozoal (Löwit) or spirochætal (White and Proescher) origin on account of the eosinophilia in the glands, the occasional hæmic eosinophilia, and the well-marked reaction, in the early stages at least, to arsenic. Dreschfeld, in 1892, and Delbet, in 1895, described a bacillus, as did Ford Robertson and Young, in a case reported by Byrom Bramwell. But the most persistent effort in this direction is that of Bunting and Yates, who found a Gram-positive pleomorphic diphtheroid bacillus which Bunting states can be found in every case and by experimental inoculation made to produce the early histological changes seen in man; but the last two statements have not been confirmed.

(3) The view that Hodgkin's lymphogranuloma is a new growth, allied to sarcoma or endothelioma, is probably derived from the impression that this follows from its extension beyond the limits of lymphoid tissues and its infiltration of tissues, such as muscle and bone, which do not contain any lymphadenoid tissue; but in this extension there is nothing incompatible with the behaviour of the infective granulomas, tuberculosis, syphilis, and actinomycosis. On the other hand, Gye and Barnard's discovery of an ultramicroscopic virus and a specific factor for new growths, and the existence of infective sarcomas make discussion of the pros and cons of the neoplastic nature of Hodgkin's lymphogranuloma rather an academic exercise than one of practical utility.

(4) The compromise that Hodgkin's disease is a transition between an inflammatory formation and a neoplasm and shares characters with both of these processes has been supported by Symmers,[84] who classes it with mycosis fungoides, Cohnheim's pseudoleukæmia, Sternberg's leukosarcoma, and Gaucher's disease. This view is expressed in Dietrich's title granuloma-like sarcoma of lymphatic glands, and by "granulation tissue tumour."

It has been stated by Symmers [83] that Hodgkin's lymphogranuloma is a systemic disease which simultaneously attacks the lymphadenoid tissues widely in the body. In the light of ordinary clinical experience this pathological conception can only pass muster if it be assumed that the simultaneous involvement remains latent in many parts while it advances in one focus.

As the cause of Hodgkin's lymphogranuloma has not been established it is premature to divide it into different forms on the analogy of enteric fever which includes infections with *B. typhosus*, *paratyphoid* A, and *paratyphoid* B. But it is tempting to imagine that there are several allied forms of a disease characterised by much the same histological appearances but differing in their virulence, in their tendency to sarcomatous transformation, and so in their clinical manifestations. Symmers [84] definitely describes two forms of the disease, one confined to the lymphadenoid tissues, the other mechanically infiltrating other structures, skeletal muscles, blood-vessels, and so forth. The differences in the histological pictures as regards the presence of eosinophile cells and the puzzling variations in the blood picture are at least compatible with this view. But, on the other hand, the factor of the resistance of the individual's body must, of course, be taken into account in explaining the differences in the course and manifestations of this as of other diseases.

NATURE OF MALIGNANCY IN HODGKIN'S LYMPHOGRANULOMA.

That Hodgkin's lymphogranuloma is malignant in the sense that it leads to death is undoubted, and it differs from tuberculosis, which in many respects it closely resembles, in being constantly fatal and not becoming obsolete.

It generalises like tuberculosis, and may appear in situations such as the liver and kidney, where the amount of lymphoid tissue is small, and in muscle (vide Figs. 1 and 2) in which there is none. But mere generalisation is in keeping with the characters of an infective granuloma. Even if it be held that true Hodgkin's disease is confined to lymphadenoid tissue, the occurrence of lymphogranulomatous masses in the liver and kidneys might be explained on the hypothesis that there is a compensatory hyperplasia of the lymphoid tissue around the vessels, and that subsequently this becomes infected with the virus of the granuloma (Longcope). But further evidence suggesting malignant characters, such as invasion of adjacent bone and the histological characters of sarcoma, described years ago by Yamasaki and by Karsner, are now established, and Ewing considers this transformation into sarcoma ("Hodgkin's sarcoma") as a tumour *sui generis* and as by no means rare. He describes the new cells as endothelial in origin, but losing this character and appearing as large round cells, so that the term endothelioma is hardly applicable. Such a transformation as the result of long-continued irritation is, of course, well recognised, and Ewing[20] has described it in lymphatic glands affected with chronic granulomatous infection. The occurrence of Hodgkin's sarcoma as a late result of Hodgkin's lymphogranuloma is rather remarkable, as it is very seldom recognised in the other infective granulomas.

The development of sarcoma in Hodgkin's lymphogranuloma might be explained in one of two ways: (1) that some of the constituent cells of the lymphogranuloma proliferate so vigorously as to become a sarcoma, or (2) that the tissues surrounding a mass of lymphogranuloma are excited by the chronic irritation to a proliferation which eventually becomes sarcoma; this process Ewing compared with the occurrence of cutaneous squamous-celled carcinoma in the site of lupus.

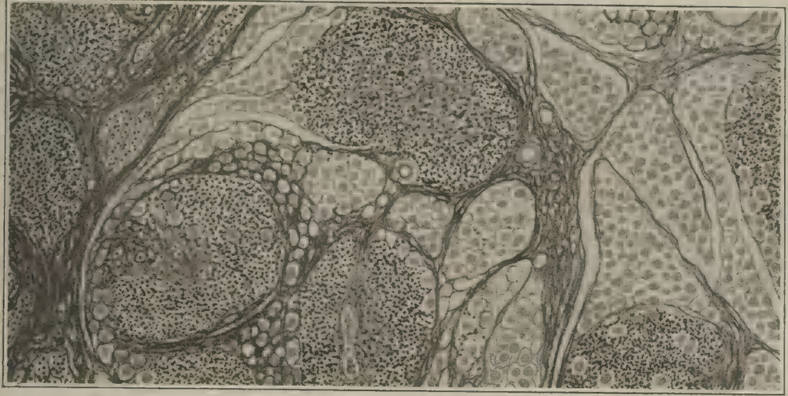
Prof. H. M. Turnbull, while fully recognising the existence of the condition which Ewing [21] terms Hodgkin's sarcoma, regards it as the "lymphosarcomatoid" form of Hodgkin's lymphogranuloma and as inflammatory rather than neoplastic. Lymphosarcoma—the form of growth concerned in the malignant transformation of Hodgkin's disease—he considers as closely allied to it, and like it an inflammatory and not a neoplasm.

The Blood.

As the bone marrow, lymphatic glands, spleen, liver, and the reticulo-endothelial system regulate the formation and destruction of the blood-cells, it is obvious that, as these organs are the chief sites of Hodgkin's lymphogranuloma, the blood counts should be correspondingly affected.

If the lesion was one of the reticulo-endothelial system in particular and at times affected these phagocytic cells to the exclusion of the others, it might be expected that in the early stages of proliferation there would be increased hæmolysis, later followed, as the result of destruction and fibrosis, by a diminished hæmolysis with a rise in the red blood count and even a polycythæmia; but, unless the early increase in the platelets described by Bunting be regarded in the light of a hæmolytic process, and not as evidence of marrow stimulation, nothing of this kind occurs, even in the few instances of the splenic form of Hodgkin's lymphogranuloma. On the other hand, this last argument is not supported by the blood picture in fibrotic conditions of the spleen, such as chronic splenic anæmia in which polycythæmia is not seen; and there are only most exceptional instances of massive tuberculosis of the spleen in which it has been recorded (vide Weber [91]). Sooner or later there is a secondary anæmia which eventually may become so grave as to demand transfusion. How far in individual cases this is due to one or more of several causes it is difficult to say; toxæmia, infiltration of the erythroblastic bone-marrow, exhaustion after compensatory or arsenical stimulation of the bone-marrow, or the long-continued treatment by X ray exposures may each play a part.

FIG. 1.



Iliacus muscle showing infiltration by Hodgkin's lymphogranuloma; small cellular and fibro-cellular nodules to the right of a larger more fibrotic nodule. Obj. 1 in., oc. Zeiss 4. (By the courtesy of Prof. H. M. Turnbull.)

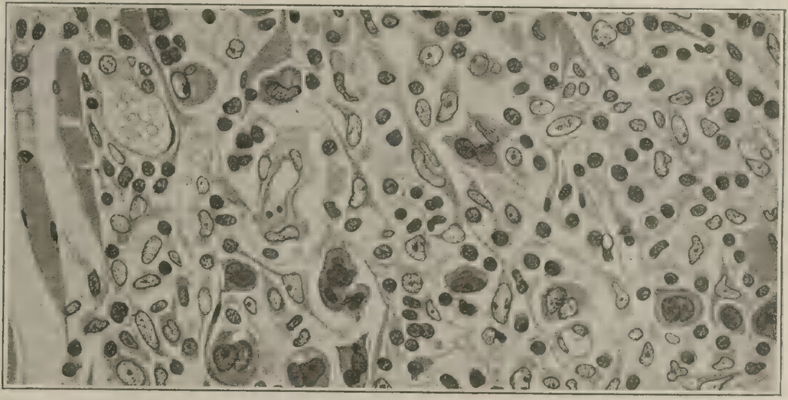
The white count does not show any constant or characteristic change. Usually leucocytosis is absent and there may be a leucopenia with a relative lymphocyte increase, especially, I believe, when the spleen is predominantly affected, a view shared by Weber.[95] Bunting described the blood picture in two stages: in cases under a year's duration, no leucocytosis, a relative lymphocytosis, diminished eosinophiles, and increase in the transitional cells. In more advanced cases when the disease is spreading widely there is a leucocytosis with a raised polymorphonuclear count (75–90), and later from exhaustion of the bone-marrow absence of blood platelets. Stewart lays most diagnostic reliance on a relative increase of large mononuclear cells—not lymphocytes—especially of the transitional type (19–33 per cent.); and also attaches importance to an absolute and relative neutrophile leucocytosis and to a relative and absolute eosinophilia. The rather exceptional occurrence of eosinophilia, which is specially seen in the rare acute cases, is interesting in connexion with the characteristic though not absolutely constant presence of eosinophile cells in the glands. These cells are probably not produced locally, but are embolic immigrations from the bone-marrow (Goldmann; D. Reed; Symmers[84]; Turnbull). In a case of acute lymphadenoma Lincoln found 68 per cent. of eosinophiles and in his collection of previously recorded cases found that the highest count was 24·5 per cent. A percentage of 88 eosinophiles in a differential count of 83,000 leucocytes was recorded by Desjardins and Ford. Among 20 cases of the disease Pepper found it in 4 or 5 per cent. The relation of eosinophilia to pruritus has attracted much attention; the almost constant relation has been insisted on by Favre and Mariani, and the former drew an analogy between adénie éosinophilique prurigène and hydatid pruritus. No doubt eosinophilia and pruritus may be associated in lymphadenoma, but they may also occur independently. In a case without pruritus seen in 1910 there was 26 per cent. of eosinophiles, and in an advanced case under Dr. E. Bellingham Smith in St. George's Hospital the count was 69 per cent., but pruritus was then absent, though present at an earlier stage when the eosinophile percentage was 39. Megacaryocytes on their way from the bone-marrow to form the "lymphadenoma cells" in the lymphatic glands have been found in the blood-stream (Symmers[84]).

It would be interesting to correlate the blood picture with the contemporary changes in the structure of the lymphatic glands. But the complicated cellular changes in the lymphogranulomatous tissue and the variations in the blood picture make this a difficult problem. A lymphocytosis would correspond with a proliferation of the lymphoid cells; but that the leucopenia in the early stage would be more easily correlated with inhibition of the bone-marrow than with its destruction is rendered probable by the occurrence of a polymorphonuclear leucocytosis in the later generalisation of the disease.

The question whether lymphadenoma is primarily a proliferation of the lymphoid cells or of the reticulum has a bearing on the condition of the blood. If with Symmers[84] the primary change is regarded as a proliferation of the lymphoid cells, their escape into the blood and a lymphocytosis would be expected. Whereas if the first and essential change is proliferation of the endothelial cells and framework of lymphadenoid structures (Turnbull; Ewing; Webster), and proliferation of the lymphoid cells, when it occurs, a secondary process compensatory for destruction of lymphoid cells elsewhere (Longcope), the absence of any characteristic blood picture is more satisfactorily explained. Acceptance of the view that the process s primarily a proliferation of the endothelial and reticular cells (the distinction between them being difficult) has been followed by the suggestion that it is, like Gaucher's disease and xanthoma (Krumbhaar), a disease of the reticulo-endothelial system—a reticulo-endotheliosis (Piney); but if it were, the Kupffer's cells in the spleen and liver should be constantly and predominantly affected, and this is not the case.

In the past, when blood counts were less minute, leukæmia was stated sometimes to supervene on Hodgkin's disease. This sequence is not supported by modern evidence, but the discovery of leukæmic blood changes would probably rule out a previous diagnosis of Hodgkin's disease. There may well be an analogy between the two questions of (1) the occurrence of Hodgkin's sarcoma or lymphosarcoma (in Turnbull's interpretation), and (2) leukæmic or proliferative changes in the blood picture. That stimulation of the bone-marrow may occur in cases of widespread generalisation of Hodgkin's disease is shown by the occurrence of a polymorphonuclear

FIG. 2.



Iliacus muscle showing Hodgkin's lymphogranuloma. High magnification of a cellular nodule. Obj. ⅙ in., oc. Zeiss K 6. (By the courtesy of Prof. Turnbull.)

leucocytosis, and it is at least conceivable that riotous proliferation of the bone-marrow, analogous to sarcoma and leukæmia, might follow.

The Relapsing Fever of Lymphadenoma.

The *relapsing fever*, first recorded in 1870 by Murchison, but often called Pel-Ebstein after the descriptions by these two writers in 1885 and 1887, has attracted much attention, as shown by the papers of H. B. Shaw, F. Taylor, McNalty, Weber,[90] A. J. Hall and Douglas, and Galloway. Hall and Douglas estimate that less than 50 cases have been recorded; but it is probable that it is comparatively seldom reported rather than that it is as rare as is often stated, and Hall and Douglas appear to share this view, for they write, "in looking over old records of these cases it is surprising to find how many of them show a definite tendency to recurrent pyrexia." I am much indebted to Dr. A. S. MacNalty, who has given me the opportunity of seeing his notes of 11 cases additional to the 32 on which his paper in 1911 was based; among his new cases is one in a boy aged 3 years, the youngest on record. In a recent thesis for the M.B. degree at Cambridge, Mr. H. F. Brewer collected from St. Bartholomew's Hospital in four years, 1921–5, 62 (42 confirmed microscopically) cases of Hodgkin's lymphogranuloma, among which there were nine cases of relapsing fever.

This periodic fever is comparable with a protozoan infection such as malaria, relapsing fever, and rat-bite fever, but has a longer span of 15 to 25 or even 36 days (Hall and Douglas). Although bacteria have sometimes been obtained by blood cultures, negative results are the rule, and there is not any convincing evidence of a secondary infection, probable as it would seem. But some change must occur, otherwise every case of Hodgkin's lymphogranuloma would show the relapsing type of fever. Symmers's view that the fever is due to absorption from areas of focal necrosis, especially in the spleen, which he finds are always present in enormous numbers in the chronic relapsing fever, has much to recommend it, and had been present to my mind before I read his paper in which he compares the sequence of events with the fever in cases of necrotic hypernephromas.

Dr. MacNalty has generously put at my disposal an analysis of 40 collected cases of this relapsing fever; 30 were males and 10 females, and half the cases occurred between the ages of 10 and 30 years, the oldest being a woman of 54 and the youngest a boy aged 3 years. He divides the cases into three clinical groups, the first, far the commonest, in which the external glands are moderately enlarged and may become soft, tender, painful, and, but not constantly, enlarge during the pyrexial periods. In the second, a rare form, the glands, small in the apyrexial intervals, with the onset of fever rapidly swell up, becoming extremely large, tender, hot, and painful, the skin over them becoming red or purple and sometimes œdematous. With the end of the febrile attack the glands and spleen shrink to an extreme degree. In the third form, of which he collected eight cases, the only glands affected are the internal, though the spleen may be palpable. As regards the duration of the relapsing type the extremes were five weeks and five years, the disease being more rapid when the enlargement was confined to the deep glands. When the internal glands alone are affected the differential diagnosis, of course, covers a large field, such as enteric fever, malignant endocarditis, and other conditions which need not be discussed. But reference should be made to the simulation of the Pel-Ebstein fever by tuberculosis. Among 500 cases of pulmonary tuberculosis at the Brompton Hospital MacNalty found six with a recurrent fever; in such cases splenic enlargement may be a clue. He also insists on the close clinical resemblance to Hodgkin's disease of widespread tuberculous adenitis.

The *primary site of Hodgkin's lymphogranuloma* is a subject of some practical importance, for enlargement of the superficial lymphatic glands being usually the first indication of lymphadenoma, has accordingly been generally regarded as the starting-point of the disease. But it does not follow that the glands first palpably enlarged are necessarily those first attacked. Symmers,[84] from pathological experience, contends that this conception is erroneous, and that primary enlargement of the abdominal or of the abdominal and thoracic glands combined is ten times commoner than primary enlargement of the cervical glands. With this Ewing [21] agrees, and adds that the enlarged superficial glands which first attract attention are merely the outlying portions of an internal lesion. The idea that the glandular enlargement on the neck may in any given case be secondary rather than primary, and, indeed, be analogous to the glandular metastases in malignant disease inside the chest and abdomen, should be more constantly in our minds, and, being based on post-mortem observations, demands clinical confirmation by systematic X ray examination of the chest in every early case; for if intrathoracic or abdominal involvement is present this should obviously be treated by deep radiation. The unsuspected existence of intrathoracic lymphogranuloma may help to explain some apparently hyperacute cases, such as Brunner's patient, a woman aged 27 years, who died with two weeks' symptoms suggesting acute cardiac failure, the necropsy revealing extensive Hodgkin's disease.

Enlargement of the superficial lymphatic glands may disappear under treatment, either entirely or partially, while insidious implication of the deep abdominal and thoracic glands progresses, and the patient becomes anæmic, emaciated, and eventually dies. Intercurrent infections, such as erysipelas, appendicitis, and lobar or influenzal pneumonia, may be followed by diminution in size or disappearance altogether of the glands which, however, subsequently reappear. The same temporary improvement, especially in the blood count, may occur in leukæmia, an event which is of interest in connexion with Symmers's [84] contention that Hodgkin's lymphogranuloma and myeloid leukæmia "are probably different quantitative responses to the same type of provocative agent." Further, this reaction is of interest in connexion with W. B. Coley's treatment of Hodgkin's lymphogranuloma by the mixed toxins of erysipelas and *Bacillus prodigiosus* and radium.

The variations in its distribution are on much the same plane as those in the infective granulomata, such as tuberculosis and syphilis, and it may be suggested that its localisation is determined by two factors: (1) the variations in the resistance of the different parts of the body, (2) the accident of a large dose of the virus at any one site. When generalisation occurs, the spleen is more often invaded than the liver, according to Longcope and McAlpine in the percentages of 57 and 48.

Intrathoracic Form.

The intrathoracic form is probably more frequent and primarily responsible for palpable glandular enlargement in the neck than is generally recognised. For a considerable time pressure symptoms may be absent, although a skiagram shows well-marked invasion of the mediastinum. The thymus may be predominantly affected and from this focus the disease may spread over the pericardium and even to the myocardium; fatal effusion into the pericardium may follow, and I have seen a chylous effusion. In 1924 Symmers collected five cases of predominant thymus localisation; but probably it is much more frequent than these figures would suggest, and the question arises what proportion of mediastinal sarcomas should be regarded as Hodgkin's sarcoma, for there seems to be a special tendency to sarcomatous change in these mediastinal lymphogranulomas (Ewing [21]). The bronchial glands are often enlarged and from them the disease may creep along the bronchi into the lungs. The first clinical manifestation may be acute pleurisy, and palpable enlargement of glands may follow later. Pleural effusion, which requires repeated tappings, is a feature of some cases. In one case the effusion caused sudden death, and in another it was chylous. In the presence of a comparatively small effusion the dyspnœa may be out of proportion to the amount of fluid; in some cases this is obviously due to pressure exerted by enlarged glands on the bronchi, as shown by stridor and skiagraphy. Symmers [84] has recorded two cases with remarkable thickening of the pleura with Hodgkin's lymphogranuloma. Pressure symptoms resulting from compression of the trachea, bronchi, veins, and nerves make this the most distressing form of lymphadenoma, as the patient may eventually become strangled, deeply cyanotic, and terribly distressed. Before this stridor may be noticeable on exertion only; I have seen attacks of dyspnœa terminating in the expulsion of fibrinous cases. The fever of the Pel-Ebstein type may suggest pneumonia, and Weber considers that patients taking arsenic are prone to pneumonia, which, however, usually runs a favourable course

In Dr. C. H. Miller's case, from which the sections showing Hodgkin's disease in muscle were taken, there was a large mediastinal growth, involving the root of the right lung and causing racemous lymphogranulomatous bronchitis, peribronchitis, and peribronchial pneumonia, with catarrhal, fibrinous, and fibroblastic pneumonia in the intervening pulmonary tissue of the upper and middle lobes of the right lung (H. M. Turnbull). Paracentesis of the right pleura, giving exit to three pints of clear yellow fluid (97 per cent. lymphocytes) was followed by pneumothorax. Death was due to the intrathoracic condition.

Pressure on the superior vena cava and innominate veins may induce cyanosis, distension of veins, œdema of the face and conjunctivæ, and an œdematous boggy condition in the supraclavicular fossæ. Clubbing of the fingers (Turnbull) and chronic pulmonary osteo-arthropathy (Weber and Ledingham) have been reported. Dysphagia may occur, but is seldom prominent. Pressure on the recurrent laryngeal nerves may lead to abductor paralysis. The oculo-cardiac reflex may be exaggerated (Jacob).

ABDOMINAL MANIFESTATIONS.

The abdominal manifestations of Hodgkin's lymphogranuloma may be divided into (1) the peritoneal, (2) retroperitoneal, (3) gastro-intestinal, (4) splenic, (5) hepatic, and (6) renal forms. The last three are extremely rare in a predominant form.

(1) The *peritoneal form*, due to affection of the mesenteric glands, may imitate tuberculous peritonitis and give rise to ascites, which is usually serous, but in rare instances has been chylous or pseudo-chylous; among 46 cases Schreiner and Mattick had two with chylous ascites, and Schölberg and Wallis in their collections of 102 cases of chylous and 71 cases of pseudo-chylous found two in each group due to Hodgkin's disease. Ascites, which may be the first physical evidence of the disease, is occasionally associated with jaundice due to pressure on the bile-ducts by enlarged glands in the portal fissure. This jaundice may intermit; I have twice seen the jaundice appear and disappear with the periodic onset and resolution of the Pel-Ebstein fever. Enlargement of the glands in the neighbourhood of the liver and fever may imitate cholecystitis or hepatic abscess, as in a case I saw after laparotomy had revealed the true state of affairs.

(2) In the *retroperitoneal form* the glands may be involved alone or together with the mesenteric glands and the spleen, and from the greater enlargement of the retroperitoneal glands it may appear that the splenic enlargement is secondary. The special symptoms due to lymphadenomatous glands in the retroperitoneal space are those of pressure on adjacent structures, such as the inferior cava causing œdema of the feet and abdominal wall and albuminuria, on the bile-ducts causing jaundice, which in a case mentioned by MacDonald came on early in the course of the disease, on the spinal nerves causing pain, and on the sympathetic plexuses leading to dyspepsia, vomiting, and colic. Pressure exerted on the bowel has been associated with obstinate constipation; and periodic increase in the size of the glands, which may correspond with the bouts of fever, may account for attacks of pain in the back or the lower limbs. Pain associated with irregular fever and resistance in the upper abdomen suggested a leaking gastric ulcer, but at laparotomy the glands showed acute Hodgkin's disease (MacDonald).

The lymphogranulomatous change, when thus hidden at the back of the abdomen and impalpable, may be responsible for obscure fever, and when its character is that of the relapsing fever type the absence of enlarged glands does not justify the diagnostic exclusion of the disease (Horder[40]), but the diagnosis is very difficult, as shown in Whittington's case, in which an acute onset first suggested peritonitis, then appendicitis, enteric fever, splenic anæmia, tuberculous peritonitis, and obscure malignant disease.

Cutaneous pigmentation has been reported in association with a mass of lymphadenomatous glands around the adrenals (Nieczkowski; Fowler; B. Bramwell; Symmers), and may be due to irritation of the sympathetic or with less probability to interference with the adrenals. Lymphogranulomatous glands around the aorta may invade the dorsal vertebræ and pass through the intervertebral foramina into the spinal canal, and even lead to compression of the spinal cord and paraplegia. It is possible that some cases of herpes zoster are due to irritation of the ganglia on the posterior nerve-roots.

(3) *Gastro-intestinal lymphogranulomatosis* is a difficult subject; more cases were recorded in the days before the histological characters were established in 1902. Among Desjardins and Ford's 135 cases there was no instance of gastric or intestinal implication, but Prof. Turnbull found one case with extensive implication of the intestine among his 47 necropsies, and Steindl has recently reported nodular lymphadenoma of the gastric mucosa, the glands in the mesentery being the only other site involved. In 1904 Salaman denied that the alimentary canal was ever affected, and, indeed, that Hodgkin's disease is a pathological entity. Although it would be natural to expect that Peyer's patches and the solitary follicles would be affected, especially in cases in which the abdomen bears the brunt of the disease, and is presumably the portal of entry, this is evidently very rare now.

The cases formerly described as lymphadenoma of the stomach and intestines, such as Pitt's collection of 25 cases divided into two groups of (1) seven cases in which the lesion began in the mucous and submucous coats of the stomach and intestine and projected into the lumen, and (2) the 18 cases in which it spread from the mesenteric glands to form diffuse sheaths in the subserous coat, would now be regarded as allied to, if not examples of, infective lymphosarcoma, or lymphoblastoma, a tumour of lymphocytes, of which Graves has collected 249 examples of the intestine.

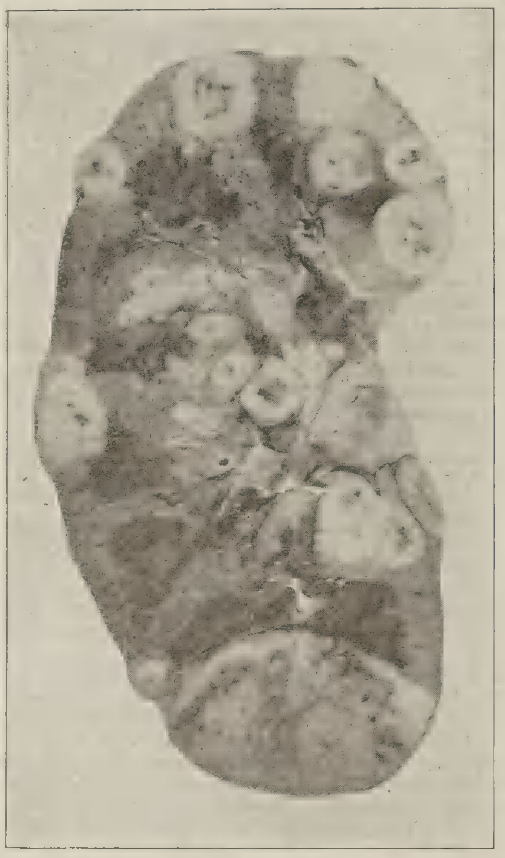
In addition to dyspepsia due to irritation of the sympathetic and abdominal distension caused by ascites and glandular enlargement, the effect of treatment by arsenic and irradiations must not be left out of account in considering the causation of gastro-intestinal symptoms. I have seen melæna six weeks after the application of radium to the abdomen, as if from a duodenal ulcer; McAlpine and von Glahn record perforation of the transverse colon in a woman aged 28 years, who had during six years been treated by X rays on 95 occasions; and Sir Thomas Horder allows me to mention a patient in whom perforation of the ileum occurred after two courses of X ray treatment to the abdomen.

(4) *Splenic form.*—The spleen is nearly always affected in cases which run their full course; Prof. Turnbull found the spleen invaded in all his 47 necropsies, and regards this as an important point in the diagnosis. Massive infiltration of the spleen by Hodgkin's lymphogranuloma with insignificant enlargement only of the lymphatic glands is infrequent, and it is very rare to find the disease entirely confined to the spleen.

Symmers described two cases; in the first[82] no glandular enlargement was detected in life, and the spleen showed the microscopic appearances of Hodgkin's lymphogranuloma, but there was no necropsy. In his second case[84] there were some palpable glands. In Wade's case no enlarged glands were detected clinically or at operation, but here again there was no necropsy. In Mellon's case there was slight enlargement of the inguinal glands. Cornwall reported a case without any disease in any glands. Dr. Krumbhaar has kindly sent me the notes of a necropsy showing lymphogranuloma of the spleen and bone-marrow, but not of the lymphatic glands. L'Esperance reported an enormous spleen, simulating a ventral hernia, with slight infection of the retroperitoneal, but not of the superficial lymphatic glands; the liver also showed invasion. Although Donhauser regarded his case of splenomegaly with sclerosed bone-marrow as a compensatory hæmatopoietic process, some later writers (Ewing) have referred to it as the splenic form of Hodgkin's lymphogranuloma. Ewing also quotes a case recorded by Kummel. In several of these cases there has been a special tendency to relapsing fever.

In some other instances after enlargement of the superficial lymphatic glands has subsided or even disappeared the spleen and liver have enlarged, and at this late stage the condition has imitated chronic splenic anæmia or the further stage with secondary hepatic cirrhosis or Banti's disease. Poynton, Thursfield, and Paterson record a case of a boy at first with some enlargement of the cervical glands, which had disappeared at the necropsy when the spleen (25 oz.) and the liver (44 oz.) were both found to be invaded.

FIG. 3.



Massive infiltration of the kidney by Hodgkin's lymphogranuloma. (By the courtesy of Dr. Carslaw and Prof. Muir.)

(5) *Hepatic form.*—The liver is affected in 50 or more per cent. of all cases of the disease, but usually this is a post-mortem, not a clinical, observation. Reference has been made to jaundice from pressure on the bile-ducts by the glands in the portal fissure, and to the possibility of mistaking an enlarged liver or apparent enlargement from glands in the neighbourhood when associated with relapsing fever for hepatic abscess. Limitation of Hodgkin's lymphogranuloma to the liver is unknown, but I have seen the organ greatly enlarged secondary to lymphadenomatous glands in the groin in one case, and at the elbow in another instance. Symmers[84] reported a case in which the liver was enormously and, except for the spleen and abdominal lymphatic glands, exclusively invaded.

(6) *The renal form.*—The kidneys occasionally show nodules of white lymphadenomatous growth, usually small in size, and in rare instances the perirenal lymphatic glands are much enlarged.

By the kindness of Prof. R. Muir and Dr. J. Carslaw, of Glasgow, I have been provided with the notes of a man, aged 26, with extensive lymphadenoma (vide Fig. 3) of the right kidney (17 oz.), which was studded throughout with whitish nodules of soft cellular tissue resembling to the naked eye secondary sarcoma, the largest being ¾ inch in diameter. The left kidney (3 oz.), apparently small congenitally, contained one or two nodules of the same growth. Microscopically the liver (47 oz.) showed diffuse lymphadenomatous infiltration of the portal canals, thus contrasting with massive invasion of the right kidney. The spleen (15 oz.) contained nodules and the retroperitoneal glands were markedly involved. The bodies of the first four dorsal vertebræ and the dura mater were invaded, and the spinal cord softened; before death the patient had become paraplegic.

Apart from a trace of albumin clinical manifestations associated with renal invasion have not attracted attention, but J. Galloway recorded the case of a man with polyuria and a protein resembling in some respects, but differing in others from, Bence-Jones's protein. The kidneys contained cysts and microscopically showed small areas of lymphadenoma.

CUTANEOUS MANIFESTATIONS.

The cutaneous manifestations of Hodgkin's lymphogranuloma are of various kinds, and raise some questions of interest. It has been estimated that 25 (Ziegler) to 39 (Cole) per cent. of the cases exhibit them in one form or another.

Pigmentation may be due to the local action of X rays, the administration of arsenic, the scratching induced by pruritus, or to nerve irritation by affected retroperitoneal glands, or possibly to adrenal disorder. Symmers's patient with acanthosis nigricans had lymphogranulomatous invasion of the cœliac plexus without any implication of the adrenals. The pigmentation may suggest Addison's disease.

The *hair* may become altered in colour; in Byrom Bramwell's patient it became lighter, finer, and more silky. Pruritus and itching may lead to perifollicular inflammation and loss of hair, but in Porter's account of a patient with almost universal alopecia no mention was made of pruritus.

Perspiration may naturally accompany the swinging temperature in the Pel-Ebstein syndrome, but it may also be associated with pruritus. The parchment-like condition due to continued scratching has been noted to cause diminution in the sweat. (Nanta and Baubru.)

Œdema of the skin may be mechanical; areas of atrophy may depend on impaired nutrition, and in rare instances hæmorrhages have been recorded; it is tempting to associate recurrent purpura, as in Weber's[94] case, with the diminution in the platelet count known to occur in the later stages; but I do not know that thrombocytopenia has been found in purpura in Hodgkin's disease.

Ætiologically the cutaneous manifestations fall into two groups, (1) the toxic, and (2) those due to invasion of the skin by the lymphogranulomatous tissue characteristic of Hodgkin's disease.

The reported incidence of *pruritus* varies; Favre considers it constant, but apparently it is a diagnostic factor of his adénie éosinophilique prurigène; his pupil Colrat found it in 11 out of 13 cases, and no doubt inquiry from the patient would increase the number of recorded instances. In Longcope's 86 histologically proved cases it was noted in 3 only; Desjardins and Ford found it in 9 per cent. of 135 similarly established cases. It is the commonest of the skin manifestations and is responsible for the next most frequent, namely, prurigo. When present it is usually an early symptom, often months before there is any glandular enlargement, and so may be regarded as scabies or analogous to the premycotic stage dermatosis of mycosis fungoides (Weber and Dove), and herein a clinical resemblance of these two conditions may be shown.

It may, however, occur after the diagnosis has become clear from the ordinary clinical picture, and then come and go, or in rare instances appear only in the terminal stage. It may be excited by stimulation of the skin by changes of temperature, X rays, or arsenic (Galloway). Its pathogeny leaves room for much speculation; on analogy it has been regarded as anaphylactic or to be toxic. Though irritation of the terminations of the sensory cerebrospinal nerves would appear an obvious explanation, it has been regarded as due to spinal radiculitis (Milian and Blum) and analogous to tabetic pruritus, and even to irritation of the sympathetic (Golay). The easy explanation that pruritus may be toxic, does not perhaps carry great weight in the light of the inconstancy of its incidence and its occasional appearance long before there are any palpably enlarged glands. But it may be that deep-seated lymphadenomatous glands provide the pruritogenic poison long before the more outlying and superficial glands are affected. The occasional occurrence of amyloid disease in Hodgkin's lymphogranuloma, of which Fabian collected 22 examples, points to the action of a powerful toxin, but there is no reason to believe that the occurrence of amyloidosis and pruritus are associated. Abnormal sensitiveness of the nervous system might be thought to play a part in the occurrence of pruritus, and Galloway's observation that arsenic, which is a nerve tonic, sometimes excites pruritus, might be mentioned to support the view that an inherent or acquired susceptibility of the central nervous system plays a part.

Pruritus is far commoner in Hodgkin's lymphogranuloma than in leukæmia, in which it is generally stated to occur. I have never seen it, and of 12 recorded examples of leukæmic pruritus it is noteworthy that 6 are cases of universal leukæmia of the skin collected by Ketron and Gay. It would be interesting to correlate the incidence of pruritus with the structural changes in the two conditions, especially whether the presence of small areas of necrosis, which are common in Hodgkin's lymphogranuloma, account by a resulting anaphylactic mechanism for the pruritus. The pruriginous papules are small-celled collections, and would appear to be purely inflammatory, and so to be distinct from lymphadenomatous invasion of the skin; but this differentiation may be far from easy in the early stage of the latter. Difficulty may also arise in distinguishing these pruriginous papules from the cutaneous infiltrations in aleukæmic leukæmia.

Among other cutaneous manifestations presumably of a toxic nature are eruptions of an erythematous, morbilliform (Webster), urticarial (MacNalty), bullous character, and universal exfoliative dermatitis. The occurrence of these different forms may perhaps be explained by differences in the resistance and susceptibility of the skin.

Infiltration of the skin by Hodgkin's lymphogranuloma, apart from extension from immediately underlying lymphadenomatous glands, is much rarer than the skin changes of prurigo. In 1924 I could collect 12 cases only. It thus contrasts with mycosis fungoides, which, indeed, has been thought by Ranvier (1869) and K. Ziegler (1911) to be the cutaneous form of Hodgkin's disease, a view difficult to harmonise with the histological appearances. The cutaneous tumours in Hodgkin's lymphogranuloma may be small or large and flat; they grow slowly and seldom, as in Langley and Cole's cases, ulcerate. As a rule, the presence of the tumours has not been associated with pruritus. As they are usually part of the generalisation of the disease they are a late phenomenon in its course.

HERPES ZOSTER.

Herpes zoster is probably more frequent in lymphadenoma than in any other disease, though it is not at all common. The questions arise, is it always due to arsenical treatment, does arsenic only render the patient more susceptible to the responsible virus, or may it in some instances be due to irritation of the posterior root ganglia by enlarged glands close to the spine? Weber's conclusion that patients taking arsenic are disposed to acute pneumonia, which is so often associated with febrile herpes labialis, is perhaps of interest in this connexion. Weber [93] has never seen herpes in Hodgkin's lymphogranuloma apart from arsenical treatment; but this has probably occurred in some recorded instances (O'Flynn; Pancoast and Pendergrass). It may appear early or late in the course of the disease, and may even recur; in a boy seen in consultation there had been three attacks. I have seen it generalise like varicella. The scars left by an attack of herpes may show up as leucodermic patches against the skin of the trunk rendered pigmented by arsenical treatment.

SYNOVITIS.

Very little attention has been paid to arthritic manifestations in Hodgkin's lymphogranuloma, and no doubt they are rare. From the two cases I have seen they would appear to be transient and not well marked.

In a man in St. George's Hospital with generalised lymphogranuloma there was œdema of the left thigh and leg from pressure and at one time evidence of considerable effusion into the corresponding knee-joint, but this had disappeared at the necropsy. A boy, aged 11 years, seen in consultation in 1923. had recurrent attacks of synovitis with considerable effusion in the left wrist and elbow, knee and ankle, and right temporomaxillary joint, followed by darkening of the skin suggesting hæmorrhage Some of the attacks were febrile, others afebrile; they subsided spontaneously; as salicylates were employed in one attack only and the heart was normal, there was no reason to regard them as rheumatic. It may be noted that he also had three attacks of zona on the right side of the chest, pruritus, and a rash. The question arises whether toxæmia due to liberation of a protein from X ray exposures, which had been freely employed, were responsible for the synovitis.

As Hodgkin's lymphogranuloma appears to invade the bone-marrow in about half the cases, it might, on the analogy of tuberculosis, have been expected that the joints would be prone to invasion. On the other hand, it may be pointed out that myeloid leukæmia, which, according to Symmers,[84] is fundamentally related to Hodgkin's disease, does not cause arthritic manifestations.

SKELETAL INVASION.

Lymphadenoma in bone was described by Weber [88] some years before the histological features of lymphadenoma were established; his case would appear to be one of multiple myeloma. Invasion of bone by lymphadenoma is now generally recognised.

Among 14 cases Symmers found it in seven, or 50 per cent., and describes two changes which may be present at the same time, (*a*) hyperplastic compensation in response to demand for more blood corpuscles, which he regards as identical with that in chronic myeloid leukæmia, and (*b*) invasion by lymphogranulomatous tissue. Among 39 necropsies at the London Hospital Prof. Turnbull found the bone-marrow invaded in 19, or 49 per cent., the femur and the lumbar vertebræ being the parts of the skeleton most often affected; from comparison of the sites of the glandular groups most enlarged, and therefore presumably primarily affected, on the one hand, and the bones affected on the other hand, he obtained results which suggest that the femur is invaded through the blood-stream, and that the lumbar vertebræ are involved as a result of direct spread from the retroperitoneal glands.

On the question whether the changes in the bone-marrow are part of a widespread reaction to the stimulus of the unknown virus or whether they are secondary, in the same way as generalised tuberculosis is, to infection from a primary focus, there may be room for discussion. Prof. Turnbull concludes that they are secondary. It is noteworthy that spontaneous fracture of bones, which may occur in secondary carcinoma and in endosteal sarcoma, is not known in invasion of bone by Hodgkin's lymphogranuloma. Bence-Jones's proteinuria, which is a feature of multiple myeloma, appears to have been recorded in one case only of Hodgkin's disease (Galloway).

PARAPLEGIA.

In rare cases paraplegia occurs in the course of Hodgkin's disease; Weber[92] refers to 12 examples, in six of which a necropsy was performed. The paraplegia may apparently be due to: (1) Pressure on the spinal cord by lymphogranulomatous growth gaining entrance into the vertebral canal either through the intervertebral foramina or from the infiltrated vertebræ; this form of pressure paraplegia appears to have occurred in five of Weber's cases. These cases would probably be those with retroperitoneal localisation of the disease, in which sarcomatous change has supervened. (2) Pressure on the nerve roots; in a case of W. Hale-White[92] this was exerted inside the vertebral canal. (3) Myelitis and acute meningitis without any evidence that the spine or dura mater had been invaded by the lymphogranuloma (Allan and Blacklock); in view of the rarity of paraplegia in Hodgkin's disease the myelitis may well have been independent of that disease except in so far as it reduced the patient's power of resistance and so favoured the infective cause of the lesion in the central nervous system. (4) It would be natural to expect that arsenical neuritis might be responsible for paraplegia; I have seen one case, recorded by Carlill, which might bear this interpretation.

DIAGNOSIS.

The distinction from other forms of glandular enlargement, tuberculous, leukæmic, chronic inflammatory, and sarcomatous, and from other pyrexial states would, if systematically considered, occupy much space, and a few points only will be touched on.

The Value and Fallacies of Biopsies.—From the difficulties of clinical diagnosis a dogmatic opinion is uncertain and often unwise until a gland has been removed and found to show the characteristic histological changes. Unfortunately a gland excised from a case of Hodgkin's lymphogranuloma does not always show the lesions; its enlargement may be due to simple non-specific inflammation or to compensatory hyperplasia. According to Prof. Turnbull the histological changes are best seen in glands which are very hard and from contraction not necessarily enlarged, and not very infrequently the microscopical report cannot go further than "lymphogranuloma, possibly Hodgkin's, but histological characters are not definite." In contrasting the value of microscopic examination of excised glands Webster found that it gave much more correct diagnostic results in Hodgkin's lymphogranuloma than in cases finally shown to be lymphosarcoma.

Diagnosis from Sarcomatous Lymphomas.—The greatest difficulty is the clinical differentiation of Hodgkin's lymphogranuloma from lymphosarcoma and the closely allied malignant lymphocytoma composed of small lymphocytes, and from endothelial sarcoma. I have seen cases apparently running the clinical course of Hodgkin's lymphogranuloma show these histological appearances finally; the question arises whether, as probably most would consider, these conditions have existed from the start, or whether they have supervened as the result of Hodgkin's lymphogranuloma. Is there any evidence of this change, such as a biopsy early in the course of the disease showing the appearances of Hodgkin's disease, and later a necropsy proving the sarcomatous nature? It does not appear to me that the therapeutic test of X ray exposures helps in distinguishing them. I have personal knowledge of what appeared to be Hodgkin's disease, but turned out to be malignant lymphocytoma reacting in a wonderful manner, life being prolonged for three years after an early termination seemed inevitable, to Dr. W. B. Coley's personal treatment by the mixed toxins of erysipelas and *Bacillus prodigiosus* and massive doses of radium.

Undetermined forms of glandular enlargement, such as those spoken of as infectious mononucleosis and glandular fever, may, though of comparatively short duration, give rise to difficulty in diagnosis. Infectious mononucleosis according to Sprunt and Evans presents a slight leucocytosis with some increase in the large mononuclear-transitional cells and many pathological lymphoid forms.

Cases of aleukæmic leukæmia—namely, leukæmia in an aleukæmic phase, and cases which come under Bunting's heading of lymphoblastic aleukæmia, can hardly be differentiated from Hodgkin's disease except by histological examination of an affected gland.

Under the heading of *splenomegalia lymphatica hyperplastica* Brill, Baehr, and Rosenthal describe a generalised lymph follicle hyperplasia of the lymphatic glands and the spleen with a normal blood count and readily curable by X rays. The spleen is enormously enlarged and shows giant Malpighian bodies the size of a barley grain $\frac{1}{8}$ in. in diameter, and almost entirely composed of endothelioid or reticular cells. The follicles of the lymphatic glands are greatly enlarged due to cells of an endothelioid or reticular type, like those seen in the germinal centres of lymph follicles, especially in children. The appearance is said to be quite different from that of ordinary follicular hypertrophy and of lymphatism. Before the curative effect of X rays was found out, splenectomy was performed in two out of three cases recorded; in one it weighed 56 oz. (1800 g.). The cause of this condition was not determined, whether from toxic influence within or without the body; they quote Kusczinski as having produced generalised lymphoid hyperplasia in mice by special diets. How often cases of this kind come to hospital, and after being diagnosed as Hodgkin's lymphogranuloma are treated with X rays and arsenic and are then lost sight of it is impossible to say; a case of general hyperplasia of all the lymphoid tissues except the thymus with a leucocyte count of 23,235 (polymorphonuclears 82 per cent.) was reported by C. H. Miller.

I have twice seen a symptom-group which may imitate lymphadenoma—namely, a "hypernephroma" of the left kidney or adrenal body producing a tumour imitating splenomegaly and glandular metastases above the left clavicle; from the fever described in necrotic hypernephromas (Symmers[84]) the resemblance might be increased.

PROGNOSIS AND TREATMENT.

The universal fatality of this disease, which in other respects has many resemblances to tuberculosis, may perhaps be correlated with the much less marked tendency of the lesions to undergo necrosis and fibrosis, as if the unknown cause were more persistent, though not necessarily more virulent, and the resisting powers of the body less able to bring the disease to an end. The absence of extensive necrosis and of caseation might suggest that the process is less acutely virulent.

The duration of symptoms varies; acute cases lasting a few weeks are rare, and the suspicion may arise that from the presence of internal glandular disease they are not so acute as the duration of obvious signs, due to generalisation, would suggest. When the primary site is in the thorax or abdomen and extension later occurs to superficial glands, the course may, when calculated from their detection, be very short; the primary enlargement, especially in the chest, may, owing to the adaptability of the viscera, remain latent for a long time and be detected by skiagraphy only.

Prognosis as to duration of life depends on treatment by arsenical preparations and irradiations, for there is not any evidence that, as in tuberculosis, a spontaneous cure occurs. The effect of arsenical preparations is at first most successful; but relapses occur, and eventually the drug fails to control the disease, as if the unknown virus became arsenic-fast or the morbid process underwent some change. The same appears to be true with regard to the radiations of X rays and radium; but in most exceptional instances this does not hold good; Schniffner recorded the case of a woman who for 11 years was benefited by X rays. It has even been suggested that X rays may lead to generalisation of the disease (Weber[95]), just as it has sometimes appeared to do in carcinoma. Simmonds and Benet prefer radium to X ray treatment, and urge that it should be applied on all the lymphatic areas in the body and not only on those obviously affected.

Vaccines of the diphtheroid organism have not proved successful, but Bunting mentions trials with an immune serum (to this organism). Success has attended the treatment, by Dr. W. B. Coley, of New York, of Hodgkin's disease by repeated injections of the mixed toxins of erysipelas and *Bacillus prodigiosus* and of massive doses of radium; of this I have had much recent information from him.

Surgical opinion has long been adverse to removal of lymphadenomatous glands on account of the difficulty of complete extirpation and of the frequency of similar intrathoracic disease. Symmers [84] throws out a warning of the danger of secondary infection as a result of excision of the inguinal glands. Removal of infective foci, such as the tonsils, and free surgical extirpation of the disease in an early stage has been advocated by Bunting and Yates on the lines of the Halstead and Crile operations for the lymphatic glands in mammary carcinoma. But the cases are not necessarily analogous, for the primary growth in the mamma is removed, whereas in lymphadenomatous glands in the supraclavicular fossæ and neck the thorax or abdomen may be the primary focus.

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BIRMINGHAM HOSPITAL SATURDAY FUND.—This fund has just distributed £25,000 from this year's collection to the voluntary hospitals and nursing societies of the city. The grant to the General Hospital amounts to £7500; to the Queen's Hospital, £5650; to the Children's Hospital, £2100; to the General Dispensary, £1750; and to the Women's Hospital, £1600.

WESTERN OPHTHALMIC HOSPITAL.—It is reported that the condition of this hospital, which is situated in the Marylebone-road, is growing steadily worse. It is housed in an old building known to date back more than a century and a half, which, notwithstanding struts and tie-rods, continues to crack, and occasionally a ceiling falls. The house, moreover, is extremely crowded and inconvenient. The staircase from the men's ward to the operating theatre is so "narrow, rickety, and crooked" that an ambulance cannot be taken up or down, and patients have to climb the stairs; upon occasion operations upon men have to be performed on a screened bed in the women's ward. The pathological laboratory is a small underground apartment, and there is only one bathroom for women patients, nurses, maids, and matron. A new building will cost £40,000, towards which £14,000 has been accumulated. As regards current expenditure the hospital pays its way.

An Address

ON THE

CASE FOR THE UNBORN CHILD.

Being the David Lloyd Roberts Lecture delivered at St. Mary's Hospital, Manchester, on Nov. 17th, 1925,

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(Concluded from p. 1158.)

THE EFFECTS OF ALCOHOL ON THE FŒTUS.

I DO not wish to raise the vexed question as to whether or not alcohol is really a dietetic substance. There are, however, some considerations in regard to it which cannot be ignored in any review of the possible effects of maternal diet on the fœtus. There is a very ancient belief that children begotten during drunkenness are liable to be deformed. This belief found its expression in pagan mythology, for Vulcan, the deformed son of Jupiter and Juno, was begotten when both parents were intoxicated; his deformed condition so angered his mother that she cast him into the volcano, where he laboured for ever at the forges of the gods. The tradition has survived, and, unlike the great majority of such myths, it appears to have a very good chance of being eventually established as a scientific fact. Already, in the opinion of several authorities, the point has been proved as nearly as such a point ever can be proved by clinical observation.

In considering the effects of alcohol, the first point to bear in mind is its great diffusibility. It becomes rapidly absorbed directly from the stomach and soon becomes equally diffused throughout the fluid and solid tissues of the body. It passes readily through the placenta and can be detected in the umbilical blood. Further, though readily diffusible, alcohol is not quickly eliminated; strictly speaking it is not eliminated at all, but gradually destroyed by oxidation in the tissues of the body. Mellanby showed that after only a small dose of alcohol had been drunk it could be detected in the blood for 19 hours. I do not think it can be disputed that alcohol drunk by the mother will pass into the fœtal circulation, that it will be present at any given moment in approximately the same degree of concentration in both mother and child, and that the child will be subjected to its influence for a comparatively long time, owing to the tardiness of its disappearance from the tissues.

It would not be right to deduce from this that a pregnant woman who takes alcohol as a beverage is thereby doing harm to her child. Physiologists are still uncertain whether it can truly be said that the action of occasional doses of alcohol is in any degree deleterious. They are unanimous that the frequent taking of alcohol, so that the tissues never get the chance of completely freeing themselves from it, is harmful in certain definite respects. But if the dose is not too closely repeated, so that the first is disposed of before the second is taken, the tissues can completely recover from its effects and suffer no harm. The habit of frequent "nipping" during pregnancy cannot fail to bring the fœtal organ and tissues under the sustained influence of alcohol, from which they never get the chance of freeing themselves by completely oxidising it.

It is notorious that a very high infant mortality occurs among the children of alcoholic parents. This is in great part due to the unfavourable home conditions under which these children are reared; poverty, neglect, bad feeding, and insanitary surroundings all tend to swell the number of deaths in infancy. It is, however, probable that the children of alcoholic parents are handicapped from the start by birth deficiency in respect of vigour and of powers of resistance. It is notorious that the chronic alcoholic adult is not a "good subject" either for surgical operation or for acute illness. If the child of a chronic alcoholic mother has been subjected to the constant influence of alcohol throughout the whole period of intrauterine development, it is hardly conceivable that it can escape without some degree of damage.

Up to this point what has been said had reference mainly to the alcoholic mother and the injury she may do to the child she is carrying. There is, however, a further aspect of the matter to which attention should be drawn. A good deal of experimental work has been done in recent years to determine the effect upon their offspring of subjecting animals, both male and female, before mating, to the effects of the fumes of alcohol, continued for a long period. As so often happens, the results obtained with different animals are widely divergent. Pearl,[14] an American observer, worked with fowls, subjecting them to the fumes of alcohol before laying, and also their eggs to the same fumes during incubation. In order to save time and avoid confusion I shall not quote his results, for the reason that reproduction in birds (oviparous) is so widely different from that which obtains in man, that the greatest caution should be observed in applying them. Stockard[15] has carried out a series of experiments with guinea-pigs which have been continued for 12 years, and cover many generations of animals. His method was to expose the guinea-pigs to a daily inhalation of alcohol fumes up to the point of intoxication. He found that very marked results were observed in the young of the alcoholised animals. He found, in brief: (1) that the fertility of the animals was diminished; (2) that the young were deficient in vigour and in power of survival after birth; (3) that a high proportion of developmental defects occurred; (4) that these defects were practically confined to the central nervous system and the organs of special sense; and (5) the defects were transmitted, in some instances, to the third generation, although only the original grandparents had been subjected to the influence of alcohol.

As regards the vitality of the young of alcoholised parents he found that only 46 per cent. survived, the survival rate for normal animals kept under identical cage conditions being 78·5 per cent. In the alcoholised animals deformities were found in 5·23 per cent. of the young, while they never occurred in control animals, unless they were closely inbred. In addition to the developmental deformities, considerable numbers of dwarfish, undersized young were found in the litters of alcoholised animals, while they were very rare with normal animals. The effects of alcohol on the male are much more marked than on the female; a certain number of normal females, after mating with normal males, were subjected during pregnancy to the influence of alcohol without any injurious effect on the young. Stockard opined, however, that evil results would have manifested themselves if the treatment with alcohol had been more prolonged.

Stockard attributed the results he obtained to a toxic effect of alcohol on the germ-plasm, producing structural alterations capable of transmission through several generations. This effect is much more marked upon the male than on the female. He did not think that alcoholisation of the fœtal environment had much to do with the effects produced upon the young.

How far these results can be held to be applicable to man cannot at present be settled. It is obvious that where alcohol is given by the method of inhalation its degree of concentration in the blood of the animal is never so high as when alcohol is given by the mouth. In these respects the experiments do not reproduce the ordinary conditions of alcoholism in man, yet the effects produced upon the nervous system of the young resemble in many respects those seen in man.

That alcoholism in the parents is one of the most important predisposing causes of mental deficiency (amentia) and epilepsy all the authorities on this subject are agreed. The percentage of cases of amentia in which an alcoholic history can be obtained is put by different observers at rates varying from 4 per cent. to 40 per cent., which I think sufficiently indicates the difficulties of such an inquiry. We have no precise observations as to the difference, if any, between the children of alcoholic and non-alcoholic parents as regards birth weight and general vitality. The information we do possess, however, is, I think, sufficient to lay upon us the duty of advising abstinence from alcohol during pregnancy, and of pointing out clearly the possible deleterious effects on the child of over-indulgence.

EFFECTS OF MATERNAL DISEASE.

When we come to consider the case of the fœtus in utero which is subjected to the influence of maternal disease, a field is opened up which is so wide that it will only be possible to glance at the subject. There are no national statistics of the causes of antenatal death, and such information as we can gather about it is gleaned from the very valuable reports which most of our lying-in hospitals now publish. There are also some foreign statistics of which we can make use.

Couvelaire[16] has recently published data taken from the records of the Clinique Baudelocque in Paris, over a series of 20 years, 1890 to 1919 inclusive. During this period out of 57,642 births, there were 1769 cases in which the fœtus had perished before the onset of labour, equivalent to a stillbirth-rate of 3·0 per 100 births. The causes of death were stated as follows :—

Syphilis..	653	Various ..	175
Toxæmias	346	No cause discovered	572

Syphilis.—It appears, therefore, that in this series more than 50 per cent. of the fœtal mortality could be traced to syphilis and to pregnancy toxæmias taken together. The number of syphilitics was probably in excess of the figure given, for a proportion of those classed as "undetermined" should in all probability be included. Couvelaire further states that since the rule has been introduced at the Clinique to practise the Wassermann test in all cases systematically, the proportion of syphilitics has risen to over 50 per cent. of the whole. It must be recollected that these are statistics of fœtuses which died in utero before the onset of labour. Unfortunately the English lying-in hospitals furnish no comparable figures regarding the proportion of fœtal deaths due to syphilis. Probably many cases are overlooked in this country because the Wassermann reaction is not in routine use. Apart from the incomplete returns of the hospitals, the only English data that we have bearing on the frequency of syphilis in the fœtus are those furnished by Eardley Holland in his recent work on the Causation of Fœtal Death, carried out under the auspices of the Ministry of Health. In his examination of 300 dead-born fœtuses only 42 cases of "proven" and six of "probable" syphilis were found, making together—i.e., including the "probables"—16 per cent. of the whole as due to syphilis. These figures are not really comparable to Couvelaire's, because in the latter the diagnosis was established not only by examination of the fœtus and placenta, but also by clinical examination of the parents, including the Wassermann reaction. Even when allowance is made for these divergences, it would appear than in the practice of lying-in hospitals syphilis is less common in London than in Paris. Probably a large proportion of our syphilitic mothers go to the Poor-law infirmary for their confinement rather than the lying-in hospitals.

At the same time it may be pointed out that our lying-in hospitals, and especially the antenatal clinics, have the opportunity of rendering a great public service by instituting a strict search for latent syphilis in women with a bad obstetric history. Modern methods of antisyphilitic treatment have in no department achieved more striking successes than in the prevention and cure of congenital syphilis. If all syphilitic mothers could be adequately treated during pregnancy the congenital syphilitic child would disappear, and the part which obstetricians could play in this work is clearly a most important one, for even if the hospitals have not facilities for treatment they could make the diagnosis and see that the patient was treated elsewhere. Couvelaire has published his results of antisyphilitic treatment at the Clinique Baudelocque during the years 1920–22. In 256 cases treatment was applied to the mothers as follows :—

1. Only during the later months ; these women had a fœtal mortality of 30 per cent.
2. Throughout pregnancy ; these had a fœtal mortality of 15 per cent.
3. Before and during pregnancy ; these had a fœtal mortality of 3 per cent.

In contrast there were 218 untreated cases of recent syphilis which gave a fœtal mortality of from 65 per cent. to 70 per cent.

Results almost as striking as these have been obtained in London by Mr. John Adams at the V.D. Clinic for Syphilitic Mothers, established under the auspices of the Metropolitan Asylums Board.

INTRANATAL PERIOD.

Let us turn now to the causes of stillbirth as shown in the lying-in hospitals, and in dealing with these data we must first exclude miscarriages altogether ; some of the hospitals do not admit these cases at all, and none give details bearing upon the causation of miscarriages, so that they are of no use for our present purpose. Next we must exclude cases in which the fœtus died in utero before the onset of labour (antenatal death), for in these circumstances the fœtus could not have been saved except possibly by antenatal treatment. There will then remain only those deaths which occurred during the birth process (intranatal death). We shall also, in connexion with certain points, have to include deaths in the neonatal period.

Antenatal death is the result of pathological processes, and can generally be recognised by the macerated condition of the fœtus when born ; a few may escape recognition and be included in the intranatal class if death occurred too recently to allow of the occurrence of maceration. Intranatal death is in the main attributable to what we may call, using the term in a broad sense, birth-traumatism. Birth-traumatism is also responsible for a considerable number of neonatal deaths, the injury received in the birth process not being immediately fatal. The figures quoted from the Clinique Baudelocque include apparently only the first class ; we have no information as to the number of deaths which occurred during birth—i.e., intranatal death.

In considering the number of fœtal deaths during labour in our own lying-in hospitals we must further take account of the fact that these hospitals receive a disproportionately large number of serious maternal complications in which the risks to the child are very high. Such conditions as ante-partum hæmorrhage and eclampsia figure largely in the hospital returns as causes of fœtal death. Further, a certain number of dead infants are delivered by craniotomy. I propose, therefore, to give first of all the gross rate, A, including all cases of dead-born children; then a corrected rate, which we may call B, obtained after deducting all cases returned as macerated; then a third rate, C, which has been obtained by deducting cases of craniotomy, of ante-partum hæmorrhage, and of eclampsia from rate B. (vide infra). The addition to rate C of neonatal deaths, directly traceable to injury, will give us the true intranatal death-rate. It will be recollected that the stillbirth-rate for the whole country is 3·3 per cent., and the dimensions of rate A, in most of the hospitals, is unexpectedly high. The rate is not much reduced by the exclusion of macerated fœtuses, except in the case of one hospital, and it will be seen that rate B is, on the average, less than 10 per cent. below rate A. The exclusion of the various maternal complications, however, cuts rate B down to little more than one-half in the case of all the hospitals alike. The figures shown in the table have been calculated for an average of five years in all but No. 6, for which only three years were available.

Fœtal Death-rate.

Hospital: 5 years' average.	Gross rate.	Corrected rate.		Hospital: 5 years' average.	Gross rate.	Corrected rate.	
	A.	B.	C.		A.	B.	C.
	%	%	%		%	%	%
1	15·7	14·7	8·9	4	12·0	9·9	5·3
2	12·2	11·5	5·7	5	5·9	5·4	3·1
3	12·9	11·7	5·6	6	5·38	—	—

The difference between the fœtal mortality-rate of the first and last hospitals on the list is surprising. Hospitals 1 to 4 are all situated in great industrial centres; Nos. 5 and 6 are in London and their patients are drawn from a class which is engaged almost entirely in domestic work and business, or light factory occupations. There are no heavy industries in the parts of London served by these hospitals. The rate A figures for hospitals 2, 3, and 4 are so nearly identical that they carry conviction of their reliablity, and I think we may take it that they indicate that the loss of fœtal life is considerably higher in an industrial population than in what, for contrast, we may call a non-industrial population. We cannot enter into any consideration of what these causes may be, but the point is deserving of further inquiry.

Rate C is that obtained when all possible allowance has been made for the special difficulties of hospital work by the exclusion of all the graver complications of labour. Except in the case of one hospital, the rate is far above the national stillbirth-rate, in which all these complications are, of course, included. In the case of hospital 1 the national rate is nearly trebled. This is a result which I had not anticipated, and I would ask you to note that in regard to rate C, as well as rate B, hospitals 2, 3, and 4 give an almost identical figure, while hospital 1 is more than 50 per cent. higher than any of them, and nearly three times as high as hospital 5. Does this imply that the infants of parents living in great industrial centres show a diminished vitality as compared with those born in non-industrial centres, which renders them less able to bear the stress of labour? No answer can be given to this question either, but one or two points may be cleared up by looking into the recorded causes of death in Group C. They fall into three main groups: (1) birth-traumatism, (2) prematurity, and (3) congenital defects and diseases. A certain number remain which are difficult to classify.

Not all the hospitals furnish information sufficiently detailed for our purpose, but I have been able to examine an aggregate of 561 stillbirths falling into rate C, with the result shown as follows:—

Of 561 stillbirths falling under rate C—

48·7 per cent. were due to trauma.
8·3 per cent. were due to prematurity.
4·9 per cent. were due to defects and diseases.

The remainder, amounting to a little more than one-third, were unexplained, or due to a variety of conditions which do not lend themselves to classification.

It appears, then, that if we exclude cases in which labour was complicated by serious maternal complications, nearly half the fœtal mortality in the lying-in hospitals whose reports were examined is due to birth-traumatism. Of course, not all the cases included under this heading showed recognisable signs of injury; in a small proportion death was returned as due to "stress of labour" or some equivalent term. There is no doubt that some infants appear to suffer severely from the effects of what we should clinically call a normal labour; the transit of the child through the maternal passages will no doubt always carry with it risks the extent of which depends in part upon that incalculable factor the endurance of the child.

A large number of deaths from traumatism occurred in premature children whose power of resistance to shock is very low in comparison with the mature child. The two causes of injury and prematurity are closely related and it will be interesting to look a little more closely into the question of premature births.

The accompanying table brings out two or three points which are of some importance. The second column gives the proportion of births, which were premature in three different hospitals.

Premature Births.

Hospital.	Premature birth-rate.	Stillbirth-rate.		Neonatal death-rate.	
		Premature.	Mature.	Premature.	Mature.
	%	%	%	%	%
3	32·9	21·21	4·30	15·29	1·10
5	10·76	25·29	3·66	17·46	3·47
6	12·24	20·80	3·17	13·50	0·55

In hospital 3 nearly one-third of the children born in the hospital were premature; this hospital, as I have said, serves a large industrial centre. In the case of hospitals 5 and 6 the proportion is 10 per cent. and 12 per cent. respectively. All the hospitals serving industrial districts show about the same premature birth-rate as hospital 3. This table certainly suggests that women engaged in industrial work are unable to carry their children to term in anything like the same proportion as those engaged in lighter occupations. You will recollect that a somewhat similar observation was made by Pinard many years ago in Paris. It is impossible to pursue this point any further, but it also appears to be deserving of more extended inquiry.

Column 3 of this table shows the comparison between the proportion of premature and mature babies which are stillborn, and it is not surprising to find that the premature stillbirth-rate is from five to seven times higher than the stillbirth-rate for mature babies. This is partly accounted for by the fact that the greater number of fœtuses born macerated are premature; from the hospital reports I should judge the proportion to be about 60 per cent. The most important factors, however, are that maternal complications are more frequent in premature labour, and that even in their absence the premature fœtus is less able to endure the stress of labour than is the mature one.

Column 4 compares the chances of survival of premature and mature babies under the same hospital conditions. Here the comparison is enormously to the disadvantage of the premature baby. The neonatal death-rate of the prematures does not vary greatly in the three hospitals, and may be put at 15 per cent. The death-rate of the mature infants varies widely from one-fifth to one-twelfth of the premature rate. The figure of 3·47 for hospital 5 was due to exceptional circumstances which prevailed during two of the five years under review, and does not truly represent the average for that hospital. But between hospital 3 and hospital 6 there is a difference of 100 per cent. in favour of the latter. I must not comment on these figures for mature babies, except to suggest that the neonatal death-rate of some of our lying-in hospitals appears to be capable of improvement. I should like further to point out that we badly need a follow-up system for our premature infants; it is important that we should know how many of those who leave the hospital alive actually survive the first three months of life. We ought to know this because to estimate the results of induction of premature labour at the end of the first month is in all probability to present the results in an unduly favourable light.

I think I have said enough to show that from the point of view of life insurance the premature baby is a bad risk. In view of this fact we must recollect that a certain proportion of premature labours are deliberately provoked by the obstetrician for one reason or another. Only those are suitable for examination which appear in the hospital reports as cases of pelvic contraction or of "disproportion," and I have collected the results of this procedure from three hospitals, which give full data. These results comprise 384 cases of induction, and show an average combined intranatal and neonatal mortality of 14·3 per cent.; in the individual hospitals the rate varied from 15·5 per cent. to 9 per cent. It is to be recollected that these are picked cases in which the general condition of the mother and the child was ascertained to be good before induction. The infant deaths are due in practically every case to some form of trauma, and the only thing that can be said about it is that if induction for disproportion cannot be carried out without an infant mortality of 14 to 15 per cent., it is time that it disappeared from obstetric practice. There is much truth in Ballantyne's contention that the premature infant is "partly a fœtus and partly a new-born child . . . in it we see neonatal physiology hampered in its action by persistent fœtal conditions." It is therefore only right that we should not make ourselves responsible for bringing infants into the world in this unfit condition unless there are sound reasons for so doing.

It will be, of course, admitted that the number of induced labours is relatively small, and that the bulk of premature births are due to the maternal complications of pregnancy which we have referred to. There is also, as we have seen, some evidence that social and industrial conditions may also be concerned, and this evidence may be shortly summarised thus:—

(*a*) Pinard showed that women admitted to hospital during the latter part of pregnancy carried to term in larger proportion than those who continued at work.

(*b*) Darwall Smith showed that premature births were four times as frequent in women with bad nutritional conditions than in those of average nutritional conditions.

(*c*) The English lying-in hospitals serving industrial districts with a large factory population show a proportion of premature births three times as high as London hospitals serving districts with a relatively small factory population.

BIRTH TRAUMATA.

We must now go back for a moment to the matter of birth injuries; you will recollect that we saw that traumatism and prematurity were the two chief causes of death in class C of our fœtal mortality table. We now want to see what direct evidence we have of the occurrence of birth traumata. The premature infant suffers severely because its vitality is low. On the other hand, the postmature or oversized infant may suffer severely because its bulk increases the mechanical difficulties of expulsion. Many normal-sized infants delivered by the natural forces alone arrive in a condition of profound shock from which, however, it is true, they practically always recover; their condition is, however, clearly the result of trauma. And further, a certain number of healthy infants die during the birth process without subsequently showing any injury to which death could be attributed. These deaths are probably occasioned by the infant's inability to withstand the stress of labour. The great proportion of intranatal deaths, however, are due to injury inflicted upon vital organs during birth. It is impossible to enter at all fully into this matter, but I want to try to form some idea of the extent to which fœtal deaths can be traced to this cause.

Herbert Spencer, in 1891, drew attention to the occurrence of visceral hæmorrhage in stillborn children, and Eardley Holland in his recent well-known work found evidence of intracranial trauma in 5 per cent. of the stillbirths he examined. Not all the lying-in hospitals give details from which an estimate can be formed, but, from the records of two hospitals, I have collated a series of 561 deaths under corrected rate C—i.e., after deduction of macerated cases, cases of craniotomy, ante-partum hæmorrhage, and eclampsia—and in 272 cases death was attributable in whole or in part to injuries received during labour. In addition 37 infants which were born alive died in hospital from similar injuries. The total loss of infant life from birth injuries was, therefore, 309, which exceeds 50 per cent. of the stillbirths and corresponds to a rate of about 4 per cent. of the total infants born in the hospital. When it is remembered that we are speaking now of infants born under conditions presenting no special difficulty, I think it must be admitted that the death-rate from injury is high enough to give us a good deal of concern.

With a view to tracking the causes of this heavy mortality from birth trauma, I have looked into the results attending delivery by forceps in the hospitals. It is to be expected that the great proportion of deaths from head injuries would occur in forceps cases, although this is not shown in the reports. The forceps results from three hospitals have been taken out for five years in each case, and all cases of craniotomy, of eclampsia, and of ante-partum hæmorrhage have been excluded.

Hospital.	Total cases.	Total fœtal and neonatal deaths.	Rate per cent.
X	940	116	12·3
Y	291	36	12·3
Z	516	155	30·0

The mean rate for the three hospitals is therefore 17·5 per cent., on a total of 1747 cases.

The forceps rates for each hospital—i.e., the percentage of cases in which forceps was applied—showed no great differences, for they were respectively 10·4 per cent., 8·6 per cent., and 9·7 per cent.

There is one further consideration which should not be overlooked—viz., that in a proportion of the cases unsuccessful attempts to deliver with forceps had been made previous to admission, sometimes in the hospital district, sometimes by independent medical practitioners. In such cases injury may have been sustained by the child before admission to hospital. In the case of hospital Y, the records permit of such cases being deducted, and the result is to reduce the number of deaths to 31 and the death-rate to 10·8 per cent. The other two hospitals do not make any mention of such cases.

It is not only in forceps cases that these injuries occur; they may, of course, occur in breech labour, and sometimes in clinically normal labours.

The low maternal mortality-rate of our lying-in hospitals is a source of great gratification to us all, but our methods of delivery have not yielded equally satisfactory results from the point of view of the safety and interests of the child. The loss of infant life is high, and we should like to feel that not in one particular but in all respects our lying-in hospitals are a model and an example of British obstetric practice. Where improvement is called for we look to the hospitals to take the lead.

I have now come to the end of what I am conscious is but a very imperfect review of the conditions which affect the fœtus during intrauterine development, and the risks to which it is exposed from maternal disease, from maternal hardship and privation, and from the rough usage of the birth process. I had hoped when I began to consider the subject that I might, in addition, lay before you a few suggestions as to the lines upon which we might strive to diminish our heavy fœtal mortality, and to ensure the arrival of our new-born in a condition of full development, uninjured by the birth process, and with an unobscured prospect of survival. The task was, however, too great for me, and I shall have to await another opportunity of ventilating this important question.

References.

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THE BEHAVIOUR OF THE DIABETIC TOWARDS CIRCULATING GLUCOSE.

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THE relationship existing between glucose in flowing blood and glucose in the tissues is largely an expression of the variations in the factors of supply and demand. In the diabetic other factors appear to present themselves, and so much have we been impressed by the altered relationship which occurs in the diabetic that we have attempted to study some aspects of diabetic metabolism—together with the action of insulin—entirely from this point of view.

The simplest method of studying this relationship—in so far as blood and muscle are concerned—appears to lie in the simultaneous determination of glucose values in arterial and venous blood. The earliest work of this nature seems to have been done by Claude Bernard [1] (1877), MacLeod and Fulk [2] (1917), and subsequently by Henriques and Ege [3] (1921), by McCormick and others [4] (1923), by Cori, Cori, and Goltz [5] (1923), by G. E. Foster [6] (1923), by Pemberton and Cunningham [7] (1924), by Lawrence [8] (1924), and by Koopman [9] (1924).

In our work arterial blood was obtained from the radial artery, from the finger tip (for serial investigations), and from arteries bleeding during surgical operations; radial and finger blood have been shown by Foster [6] to possess identical amounts of glucose under all conditions, an observation which we have confirmed. Venous blood was obtained from the median basilic vein. Both procedures were carried out as nearly as possible together, the samples were oxalated, and estimations were made at once by the method of Folin and Wu.[10] Values of glucose and of substances chosen for controls are expressed in milligrammes per 100 c.cm. of blood. Emotion arising from pain, fright, &c., appeared to have no influence on either arterial or venous values.

TABLE I.

No.	Date in 1924.	Conditions.	Urea.		Glucose.		Chloride.		Phosphate	
			A.	V.	A.	V.	A.	V.	A.	V.
1	7/2	Ether 15 min., fasting.	13	12	110	100	487	463	—	—
2	8/2	Ether 40 min., fasting.	8	7	171	150	—	—	—	—
3	15/2	50 min. p.c.	10	11	86	79	425	412	4·3	4·2
4	18/2	¾ hr. after 50 gr. glucose.	12	12	260	177	460	460	5·62	5·6
5	21/2	Diabetic fasting 5 hr.	22	20	300	214	—	—	—	—
6	22/2	2½ hr. p.c.	45	46	120	120	494	502	11·7	10·5
7	26/2	30 min. after adrenalin and glucose.	13	12	231	200	450	440	5·0	5·0
8	3/3	Glucose and 6 units of insulin.	12	12	222	177	518	530	3·8	3·6
9	21/3	Diabetic 3 hr. p.c.	—	—	300	288	490	496	6·0	5·9

As it might be supposed on a priori grounds that such factors as circulation through the lungs and velocity of flow might themselves determine the difference between arterial and venous concentration of glucose, and might thus invalidate deductions drawn from presumably specific causes, we found it necessary to use controls. As will be shown in Table I., controls indicate that these constant physico-chemical factors exert little or no influence, contrary to the expectation of MacLeod.[11] The substances used as controls and estimated together with glucose were: urea by the method of Van Slyke,[12] chloride by Bang's [13] method, and inorganic phosphate by the method of Bell and Doisy.[14]

The values for glucose differ, whereas those for the controls do not; observations of these differences, in both diabetics and non-diabetics, in four separate conditions are set out in Table I. These four conditions are (*a*) fasting at rest, (*b*) with a glucose meal, (*c*) under the influence of ether, (*d*) under the influence of insulin both fasting and with food. In the fasting state the results obtained from both diabetic and non-diabetic are given side by side in Table II.

TABLE II.—*Fasting at Rest.*

Non-diabetic.					Diabetic.					
No.	Date.	Hours p.c.	A.	V.	No.	Date.	Hours p.c.	A.	V.	G.*
	1923.					1923.				
1	29/10	3	84	87	1	16/10	3	387	428	+
2	8/11	4¼	60	58	2	11/12	3½	494	428	+
	1924.				3	16/12	5	294	315	+
3	7/1	2	90	71			5½	281	301	+
4	14/1	3¼	70	70	4	28/1	3½	133	126	−
5	16/1	5¼	88	88						
		6	87	90		1924.				
		6¼	79	80	5	21/2	5	300	214	+
6	23/1	3½	70	70	6	13/3	4	250	285	+
7	30/1	2½	86	77	7	21/3	3	300	288	+
8	12/3	6½	86	86						
9	17/3	8	93	87						

*G = Glycosuria.

From these results it would appear that in the non-diabetic fasting tends to produce identical values; therein confirming the work of Henriques and Ege,[3] and of Foster [6]; very short or very long periods after the meal, as in Nos. 3, 7, and 9, show a relatively higher arterial value. In the case of the diabetic it would appear that there is nearly always a fasting difference between arterial and venous levels. In severe untreated cases the difference is largest, and in some cases the venous value may be greater than the arterial.

Influence of Glucose.

The ingestion of carbohydrates causes a greater rise in the arterial value, as shown in Fig. 1. Fig. 2 shows the effect of carbohydrate ingestion two hours after a meal, when the arterial and venous values have not yet resumed their normal fasting relationship; it will be noted that the rise in neither is so great as in Fig. 3.

Exhibition of glucose to diabetics under therapeutic control produced the same type of difference as with normals—i.e., arterial values were higher than venous. We have not considered experiments on diabetics not under control to be entirely justifiable, but we imagine that the arterial-venous relationship would be similar to that obtained under the influence of ether anæsthesia in the diabetic (vide Fig. 4).

Influence of Ether.

The anæsthetic administration of ether to normal subjects also causes a hyperglycæmic effect, comparable with that which follows the exhibition of glucose and adrenalin. Arterial values are also again higher than venous.

Non-diabetic.

Subject.	Duration.	Arterial.	Venous.
(1) A. B.	15 min., ether	110 mg.	100 mg.
(2) J. C.	40 min., ether	171 mg.	150 mg.

Arterial and venous values were studied in a diabetic of moderate severity and under control, on whom a major operation was necessary; he entered the theatre with a venous concentration of 99 mg. glucose and a CO_2 combining power of 57 vols. per cent.—he was under ether anæsthesia for 40 min.; during the first period the arterial concentration was higher than the venous, but later, as his uncontrolled diabetic condition manifested itself, the venous

FIG. 1.—*Non-diabetic.*

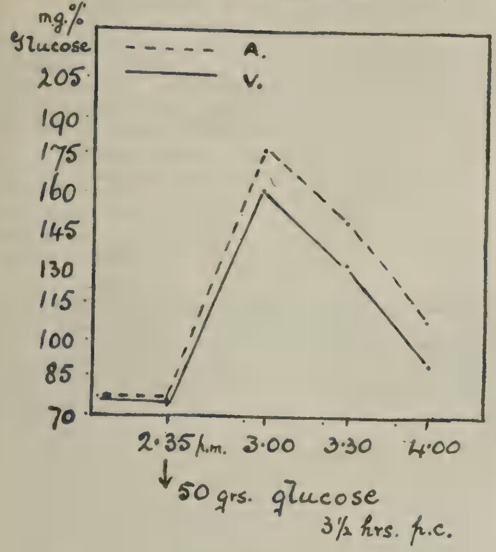


FIG. 2.—*Non-diabetic.*

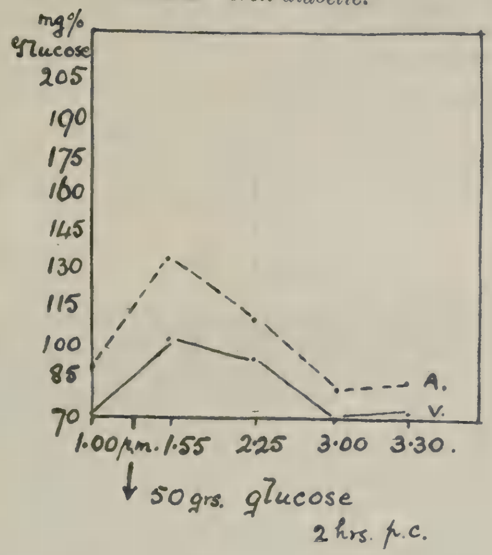


FIG. 3.—*Diabetic.*

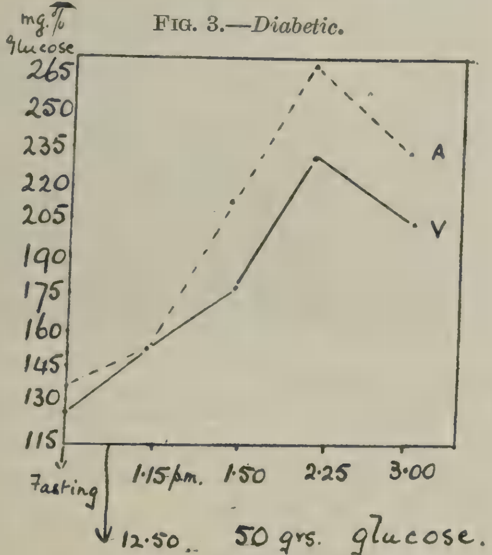


FIG. 4.—*Diabetic.*

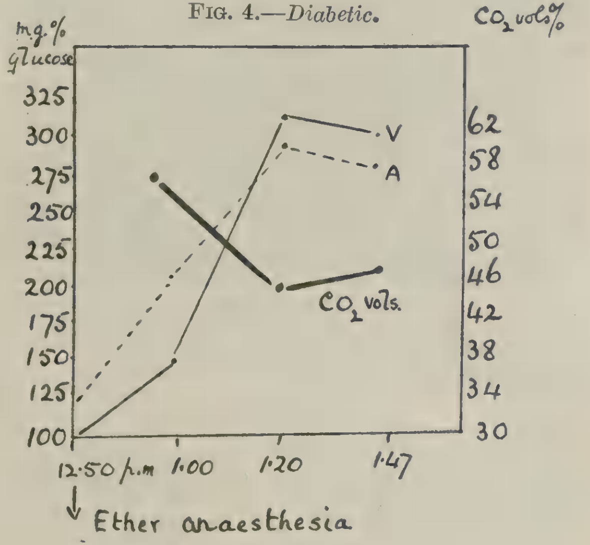


FIG. 5.—*Non-diabetic (with glucose).*

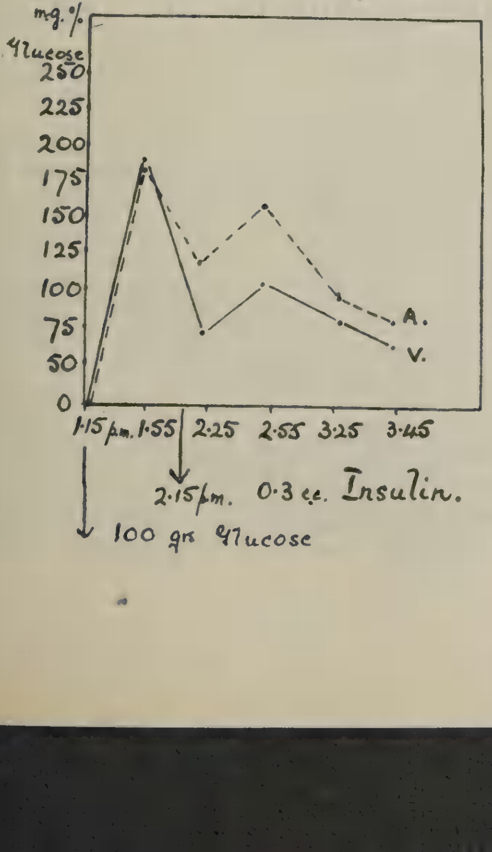
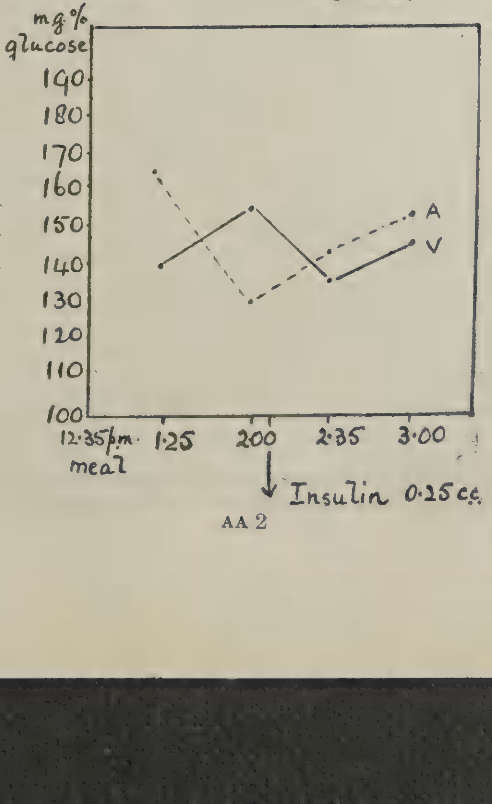


FIG. 6.—*Diabetic (with glucose).*



value became higher, glycosuria occurred and depletion of alkali reserve (Table III.). The behaviour of the diabetic during ether anæsthesia has been more fully studied by us in a recent communication.[15]

Table III.—*Influence of Insulin when Fasting.*

Non-diabetic.					Diabetic.						
No.	Date.	Conditions.	A.	V.	No.	Date.	Before insulin.		After insulin.		Dose in units.
							A.	V.	A.	V.	
	1924.					1923.					
1	4/3	4 hr. p.c. ..	124	116	1	15/10	—	—	266	132	10
		25 min. after			2	19/10	387	428	188	165	10
		2 units* ..	93	93	3	12/12	129	155	141	133†	5
2	12/3	6 hr. p.c. ..	86	86	4	16/12	294	315	153	146	10
		30 min. after									
		4 units* ..	86	77		1924.					
3	17/3	8 hr. p.c. ..	93	87	5	21/2	277	461	399	214	20
		30 min. after			6	13/3	250	285	—	—	—
		4 units ..	86	80	7	21/3	300	288	184	150	20
4	18/3	4 hr. p.c. ..	89	90	8	10/4	396	396	120	98	30
		30 min. after									
		8 units* ..	91	86							

* Units of insulin. † Glucose administered.

In fasting normals small doses of insulin have little effect on the glucose level and the arterial venous relationship. In diabetics, on the other hand, insulin not only reduces both arterial and venous values, but, when the venous value is higher than the arterial, a reversal occurs.

In the normal, insulin, given after the ingestion of glucose, exerts a specific depressing action on the value of blood-sugar; the typical glucose curve is cut short, and, as shown in Fig. 5, the difference already existing between arterial and venous values is still further increased by the relatively greater fall in venous concentration. We would draw attention to this result, as, apparently, a specific effect of insulin. Using anæsthetised animals, this effect was not obtained by McCormick and others.

In the diabetic, as in normals, a general reduction takes place; in the case of serial investigations, the apex of the curve is removed (Fig. 6). After the exhibition of insulin the venous value, if previously higher, always appears to fall below the arterial.

Conclusions.

From the results which we have recorded above it is clear that the diabetic differs from the non-diabetic in his behaviour towards circulating glucose. These differences are: (1) Fasting and without insulin—the arterial value differs quite widely from the venous. (2) With glucose and ether and without insulin—there is a greater increase in both arterial and venous values, and in the fasting state the venous value may rise higher than the arterial. (3) With insulin—either fasting or with food—the relationships between arterial and venous values tend to approach those of the non-diabetic.

The tissue which is here at fault appears to be muscle. In order to explain these observations, it must be assumed that diabetic muscle tissue cannot take up glucose, or cannot hold glucose, or is giving rise to glucose; all these abnormalities are removed in some measure by insulin. Upon what mechanism does this depend? There are several factors which tend to establish the diabetic type of metabolism. They may be summarised in their probable effect on arterial and venous glucose levels: (1) Tending to raise arterial content—glycogenolysis in liver; decreased power of glycogen formation. (2) Tending to lower arterial content—excretion of glucose by the kidney. (3) Tending to raise venous content—glycogenolysis in muscle; breakdown of tissue protein into its potential 54 per cent. content of carbohydrates; muscle saturated with glucose yielding up its excess; possible synthesis of glucose from fat.

All or some of these factors are responsible for the differences observed between arterial and venous blood in the diabetic; but when, under the influence of insulin, the diabetic tends to approach the non-diabetic type in such relationships, which of these factors ceases to operate? From our results, it is, we think, strongly suggested that insulin so influences the behaviour of the diabetic that he can take up glucose from arterial blood and, by holding it in his muscles, in some form exhibit those lower levels with an arterial superiority over venous content which is characteristic of the non-diabetic.

This may be attributed to several causes, such as diminution of glycosuria, sparing of endogenous protein, increased glycogen formation, or increased carbohydrate metabolism. Both the latter are known to occur; increased glycogen formation has been shown to take place in the liver of depancreatised dogs fed with carbohydrate and insulin by Banting and Best[16]; the respiratory quotient has been shown to rise in diabetics by Banting, Campbell, and Fletcher.[17] From this investigation we would submit that the behaviour of the diabetic and the characteristic alteration obtained with insulin turns upon the factor of glycogen formation, as foreshadowed by Langfeldt,[18] although we are aware that Dudley and Mariam[19] did not obtain increased glycogen formation in the muscles of normal animals in whom insulin convulsions had been produced.

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A CASE OF

CALCIFICATION OF THE PLEURA

OF AN UNUSUAL TYPE.

By F. H. YOUNG, M.B. Camb., M.R.C.P. Lond.,
MEDICAL REGISTRAR, CHARING CROSS HOSPITAL.

Calcification of the pleura and lung stones have attracted the attention of physicians from the time of Aristotle and Galen, and reports of cases can be found in their records.[1]

Until the advent of radiography the reports were those of cases discovered post mortem or at operation, but since radiography has become general in lung conditions, a considerable number of cases of various types of calcification of the pleura have been reported.

A general review of the subject was published by Pritchard,[2] and his conclusion, based on reports from literature and eight cases reported by himself, was that the origin of the condition was usually not tuberculous. The analysis of his cases shows that of the eight, three followed pneumonia, two pleurisy (cause doubtful), one probably tuberculosis of the lung, one trauma, and for one no cause was discovered. This case showed merely an isolated calcified plaque. In no case were tubercle bacilli found in the sputum. Respiratory symptoms were complained of at the time of examination in all cases except the last, and it is into the same class as this that the case described here apparently falls :—

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[1] Aristotle and Galen, quoted by Flozzl, F., Gazz. med. di Roma, 1912, xxxviii., 562.

[2] Pritchard: Arch. Int. Med., 1923, xxxii., 279.

A. H., female, aged 54, was seen on account of pains in the legs and hips running downwards to the calves, worse on movement and relieved by rest. Six months previous to the date of examination she had been absolutely well, and denied any history of respiratory symptoms or disease. When seen she had no cough, sputum, or loss of weight, but she was slightly dyspnœic on severe exertion. There was no family history of tuberculosis. This history was confirmed by relatives. On examination she had signs of slight hypothyroidism. T., 97·4° F.; P., 80; R., 20. No enlargement of glands. Some evidence of osteo-arthritis of the hip-joints and some tenderness over both great sciatic nerves; C.N.S. otherwise normal. No abnormality detected in abdomen or in the urine. Pulses equal. Artery slightly thickened; B.P., 160/110. Chest well covered; antero-posterior diameter increased; movement poor, especially at the left base. Shrinkage of the bony cage on the left side. Heart not enlarged or displaced; sounds normal, but distant. Lungs—Left: note markedly impaired over the whole lung, especially in front, and in the axilla, except at the extreme apex and base. Vocal fremitus and resonance diminished in the left axilla, normal elsewhere; breath sounds diminished throughout and bronchial in character from the third rib in front downwards, and broncho-vesicular over the whole of the back; coarse râles, increased by coughing, throughout the lung. Right: normal, except breath sounds somewhat exaggerated and expiration prolonged. The radiograms reproduced here show a dense shadow outlining the left lung, and also the heart, in a lesser degree. There is some collapse of the lung at the extreme apex and also at the base.

Radiograms of a Case of Calcification of the Pleura.

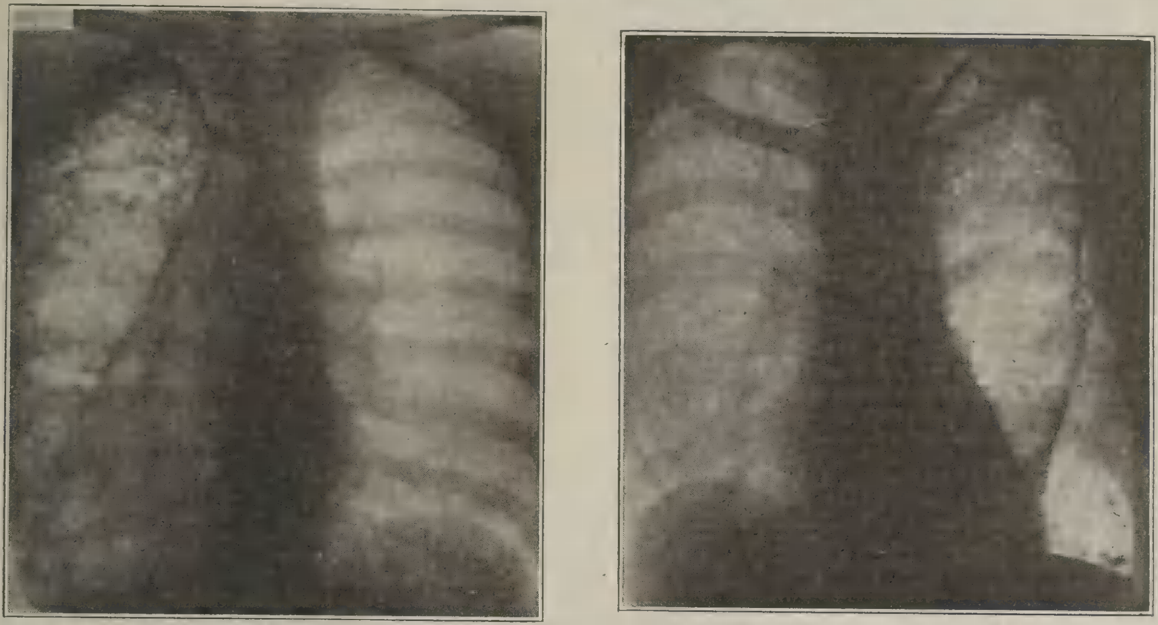

Plate in front.

Plate behind.

The points of interest about the case are: (1) the extent and the diffuseness of the calcification; (2) the absence of any respiratory symptoms at the time of examination; (3) the absence of any history of respiratory disease.

I am greatly indebted to Mr. G. Loughborough for the radiograms.

CULTIVATION OF THE SPIRILLUM OF RAT-BITE FEVER.

By TH. JOEKES, M.B. LEIDEN, M.R.C.S. ENG.,
LATE SENIOR DEMONSTRATOR IN PATHOLOGY, ST. BARTHOLOMEW'S HOSPITAL; CONSULTING PATHOLOGIST TO CHILDREN'S CLINIC, MARYLEBONE, N.W.

SINCE the discovery of the spirillum of rat-bite fever by Futaki, Takaki, Taniguchi, and Osumi [1] in 1915, numerous attempts have been made to cultivate this organism. Futaki and his co-workers claimed to have been successful with Shmamine's [2] medium, the cultures showing the organisms in great variety of shape and size from 1·2 up to 19 μ in length; they were, however, unable to grow them in subculture. These culture experiments have been repeated by many other workers as well as by myself. Using this medium at different pH concentrations, and incubating them at different temperatures, one nearly always obtains the "spirochæte" described by Futaki, but there is little doubt that one is dealing with "artificial spirochætes" as described by many workers. In 1922 Sangiorgi [3] records successful cultivations, but as no description of his medium has been given, and as repeated inquiries of the author have as yet elicited no reply, I have not been able to repeat his experiments.

During the course of my investigations with regard to the presence of the *Spirillum morsus muris* in the wild rats of London, over 25 per cent. of the rats were found to be infected. With a view to establishing whether all the strains found were identical, or whether they could be grouped in different types, cultures were made in the original Noguchi's medium and its numerous modifications, in most of the media used for the cultivation of the spirochæta icterohæmorrhagica as well as in the more commonly used media, under varying conditions as to reaction, temperature, and aerobiosis. All the cultures gave negative results.

In 1923 Vervoort,[4] in Sumatra, examined 258 patients with febrile attacks of unknown origin, and, using a medium composed of 1 g. peptone and 3 c.cm. normal phosphoric acid dissolved in 900 c.cm. distilled water, he succeeded in growing spirochætes in 25 per cent. of the cases. Extensive experiments with the medium again proved unsuccessful until, in analogy with Boeck and Drbohlaw's [5] method of cultivating amœbæ, media were tried consisting of Vervoort's medium poured on the top of a solid medium. At last, on trying a medium composed of an ordinary inspissated horse-serum-slope (as commonly used for the cultivation of the Klebs-Löffler bacillus) covered by 10 c.cm. of Vervoort's medium with a pH of 7·2 inoculated with blood of an infected guinea-pig, I obtained positive results. The cultures were positive after 24 hours' incubation at 37° C. aerobically. Incubation at lower temperature or under anaerobic conditions gave less satisfactory results. Of six primary cultures made from the blood of six different guinea-pigs three were successful, and have now been carried on until the thirty-fourth subculture.

The reaction found to be most suitable for the growth of these spirilla is pH 7·2 to 7·6. In this connexion it should be remembered that the serum-slope acts as a potent "regulator" or "buffer." It was found that the reaction of Vervoort's fluid, which is originally 6·6, had altered to pH 7 to 7·2, after having been warmed for 15 minutes to 37° C. in contact with the serum-slope. From this it is evident that the reaction of the Vervoort's medium should not be readjusted to pH 7·2 before adding it to the serum-slope, as if this were done it would become too alkaline on incubation. In some of the cultures the spirilla were still found alive and actively motile after three weeks, and it seemed to make little difference whether they were kept at room temperature or at 37° C. Once the primary cultures were obtained it was just as easy to make subcultures in 1 per cent. glucose broth—preferably with the addition of some defibrinated rabbit's blood—as in the original medium. In both the primary cultures, as well as in the subsequent subcultures, mainly short forms were found after 24 hours' incubation, and only comparatively few long forms, whereas after further incubation the longer forms became predominant. So far I have not succeeded in infecting mice with the cultures, neither have I been able to obtain cultures from infected mice, but only from guinea-pigs.

A few interesting facts have been observed with regard to these cultures—viz., all the cultures, although made under the most strictly aseptic conditions, showed a motile coliform bacillus as well as the spirilla. Experiments are still being carried out to determine whether this is a matter of obligatory symbiosis, as in the case of Kermorgant's [6] spirochæte of mumps, or whether the bacilli are simply a chance contamination.

With a view to separating the spirilla from these bacilli, cultures were filtered through Chamberland's L.2 filters. Although actively motile spirilla could be observed in this filtrate, but never any bacilli, subsequent subcultures from the filtrate were still found to contain the bacilli. These filtration experiments are being repeated with L.3 filters, and it will be interesting to compare the results with those of Salimbeni, Kermorgant, and Garcin.[7] These authors, working with mice infected with rat-bite fever, failed to find spirilla in the spleen, but a filtrate through L.3 of an emulsion of the spleen was found to be highly infective for mice. As a matter of fact, they found that mice inoculated with such a filtered emulsion became as quickly and as strongly infected as those which had been inoculated with strongly infected blood. Another interesting point of minor importance is the discovery that the presence of yeast in the cultures apparently killed the spirilla within 24 hours.

A further and more detailed report of the work done is to be published shortly. This work has been carried out partly at the Wellcome Bureau for Scientific Research, under a grant from the Medical Research Council, and partly at the National Institute for Medical Research at Mount Vernon. I should like to record my thanks to Dr. Andrew Balfour and Dr. C. M. Wenyon—past and present directors of the former Institute—and to Capt. S. R. Douglas and Mr. C. Dobell, of the latter, for all the kindly interest they have taken in the work and their many valuable suggestions. Last, but not least, I want to thank Dr. P. O. Ellison for his untiring assistance and collaboration throughout.

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A CASE OF PSORIASIS.

ISOLATION OF MONILIA FROM THE SKIN SCALES, MOUTH, AND SPUTUM.

BY GERALD G. SANDERS, M.B., CH.B. EDIN.

THIS case of chronic skin disease, diagnosed in London and in India as psoriasis, is of interest on account of the isolation from the skin lesions, mouth, and sputum of a monilia, a member of a group found in thrush and allied infections and believed to be ætiological factors in disease in man.

Clinical Record.

Up to five years ago the patient, a married woman aged 36, was in good health. Her mother died with cancer in the stomach and secondary nodules in the liver. When travelling in India in 1920 the patient's foot was injured by accidental contact with the heel of a boot worn by another person. The skin on the dorsum was cut and she lost some blood. The cut did not heal, and in a day or two the skin around became discoloured, and a lesion similar to that shown at Fig. 1 (B) formed there. This lesion did not yield to treatment. Six weeks later she was alarmed to find on the external surface of both legs, around the knee-joint, similar lesions which became confluent; the disease then spread until the surface of both legs was partially covered. These lesions spread to various parts of the body, starting as small patches which rapidly became confluent. The skin condition has been described by more than one authority whom she has seen since 1920 as "typical of psoriasis," and in 1924 was again diagnosed as such. I saw the patient first on June 4th, 1925.

Condition on Examination.—On the skin on the lateral surfaces of both knee-joints large scaly lesions were seen; these were found also on the skin around the left hip-joint, on the back, on the left elbow, and also, to a lesser degree, on the face and scalp. In the sublingual region of the mouth an extensive white film seemed to cover the mucous membrane, and this film was seen also around an ulcer on the left margin of the tongue, an ulcer which had been present for a year and a half and which the patient associated with the friction of a dental plate. It was from one of my swabs from this ulcer that moniliæ were cultured; moniliæ were also found in the sputum, but they were not found in a special swab I took from the pharyngeal region. In the perineal region a number of short papillomatous tumours were seen, grouped together on quite a small area of the skin.

Organisms Described.—1. From scales of the skin lesion without culture; smear preparation Gram stain: (*a*) many Gram-negative coccidia; (*b*) streptococci and staphylococci.

2. From scales of skin lesion after culture in bouillon, 48 hours at 37° C.: (*a*) moniliæ and Gram-negative coccidia; (*b*) branching mycelial threads; (*c*) streptococci and staphylococci.

3. From sputum; smear preparation Gram stain: (*a*) Gram-positive cocci; (*b*) Gram-positive short chain streptococci; (*c*) Gram-positive diphtheroid bacilli; (*d*) Gram-negative cocci.

4. From sputum after culture at 37° C. for 48 hours: (*a*) a few colonies of monilia; (*b*) *Streptococcus brevis*; (*c*) *Staphylococcus aureus*.

5. From region of ulcer in left side of tongue, special swab, smear preparation Gram stain: (*a*) monilia; (*b*) streptococci.

6. From mucous membrane sublingual region; special swab, smear preparation Gram stain: (*a*) monilia; (*b*) streptococci.

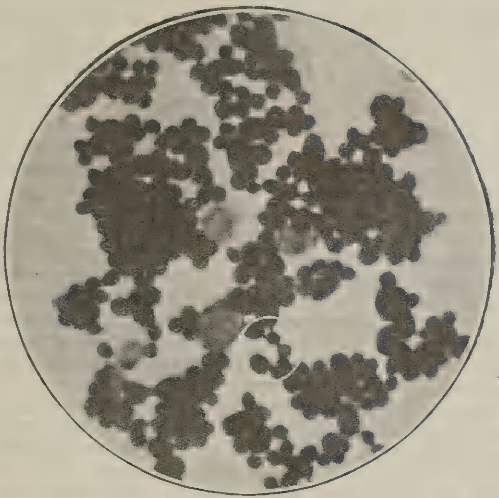
7. From nasopharynx; special swab: (*a*) cultures sterile.

8. From urine and fæces no moniliæ were obtained; but many Gram-negative bacilli and Gram-positive streptococci.

The following are fermentation tests of moniliæ isolated on agar slope:—(1) Glucose: acid and gas. (2) Lævulose: acid and gas. (2) Maltose: acid and gas. (4) Saccharose: acid and gas. (5) Lactose: acid, mostly gas. (6) Raffinose: alkaline, no gas. (7) Adonite: slightly alkaline, gas. (8) Sorbite: strong alkaline. (9) Galactose: acid. (10) Mannite: acid, slow gas. (11) Dulcite: no reaction. (12) Insulin: no reaction. (13) Litmus milk: alkaline. (14) Neutral red: gas.

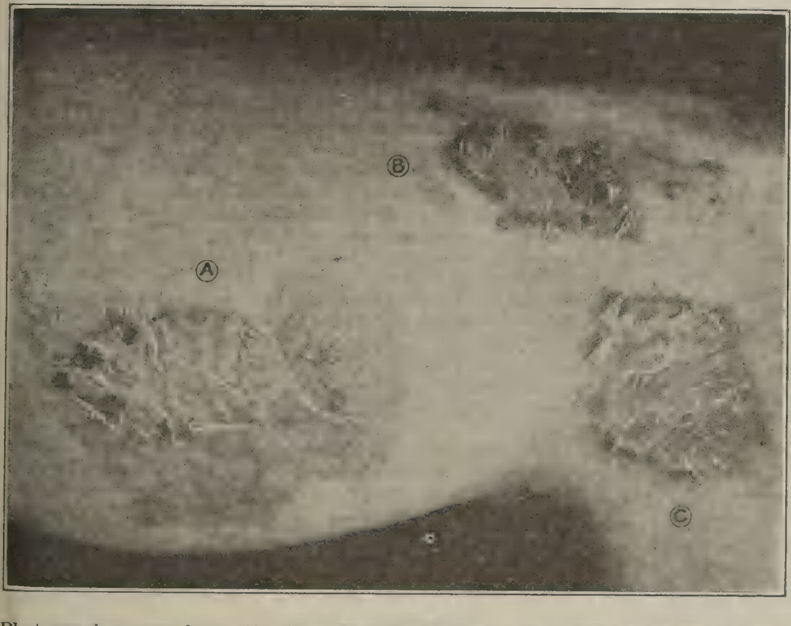
Moniliæ.—Macroscopic characteristics: on glucose agar the colonies of moniliæ appear as white, creamy colonies, about a quarter of an inch in diameter in many cases. Microscopic characteristics: the moniliæ appear as large Gram-positive cells (Fig. 2) frequently producing buds and mycelial threads. In this and other microphotographs from this film a sort of fine reticulum forms a bridge connecting each monilia. The word monilia means "necklace," the reticulum suggesting the "string" of the necklace. In Fig. 2 attention may be drawn to cells which take the Gram stain only in part of their substance; the remainder of their substance is stained with the counterstain. The Gram-negative coccidia are not included in this photograph, though they are cleary visible at this power in many of the films.

FIG. 2.



Photograph (× 1000) of moniliæ stained by Gram method. Four cells have only partly taken up the Gram stain. Within the circle can be seen the fine reticulum connecting the moniliæ.

FIG. 1.



Photograph on panchromatic plate of lesions on the outer surface of the left leg in the region of the knee. The patch B is untreated; that at C has been treated with copper sulphate lotion (1 to 100), and that at A with tinct. iodi (10 per cent. in 90 per cent. alcohol); in both cases two days before the photograph was taken.

Summary.

These analyses and the information they give have an important bearing on treatment. They show that in the skin lesions and the mouth the streptococcus and the monilia are closely associated; the streptococcus is shown to be the more widely distributed organism as it was found in alimentary tract and urine, in the latter situation with *Bacillus coli.* The hæmoglobin was shown to be 60 per cent., but full count of the blood cells showed that otherwise there was no change from the normal. The patient appeared toxic, and had painful rheumatic symptoms in the left shoulder region as well as pain in the suprapubic region. These symptoms disappeared later, at which time the urine was shown to be sterile after 20 days treatment with urotropine. Antistreptococcic serum (Parke, Davis and Co.), polyvalent, was given subcutaneously to the extent of 30 c.cm. in all; the first dose was given in divided quantity, 9 c.cm. two hours after a preliminary injection of 1 c.cm. The right ankle became tender during the following few days, and there was a reaction throughout most of the skin surface; much redness and a sort of nettle-rash and itching. The serum was undoubtedly beneficial and later, after six detoxicated vaccines, made from the streptococci isolated from the skin lesions, all the painful back symptoms were removed. I propose to give another six of these vaccines. It is not possible here to go into the condition of the teeth, which were probably responsible for much of the streptococcus infection. I suggested ultra-violet light treatment for the skin condition and hope this may be applied to the mucous membrane of the mouth.

The patient is now having ultra-violet light treatment at one of the London hospitals.

Acknowledgments are due to the Associated Clinical and Analytical Laboratories, Ltd., London, for laboratory assistance. I have availed myself of the opportunity to submit these organisms to the Curator, National Collection of Type Cultures, Lister Institute of Preventive Medicine, Chelsea, London, S.W., so that they may be preserved. Further research by fermentation and other experiments, and animal inoculation tests is very desirable.

(*Continued at foot of next page.*)

Medical Societies.

ROYAL SOCIETY OF MEDICINE.

SECTION OF OBSTETRICS AND GYNÆCOLOGY.

A meeting of this Section was held on Dec. 3rd, Mr. T. G. Stevens, the President, occupying the chair.

Exhibition of Specimens.

Dr. Everard Williams sent descriptions and slides of two specimens. The first was that of a Fallopian tube containing a loose fragment of menstruating endometrium associated with endometrioma of the ovaries. The patient had had for some time dysmenorrhœa, and this had been getting worse. The specimen consisted of both ovaries and tubes, and the uterus was covered with numerous dense adhesions, while there were cysts containing tarry material, these cysts having ruptured during the removal. Adhesions had bound the ovaries to the back of the broad ligaments, so that removal of the Fallopian tubes became necessary. These tubes, however, were seen to be free, and were normal in appearance. Both ovaries contained abundant endometrium in a non-menstruating phase. The right ovary was exhibited on the screen, showing on one side endometrioma, on the other side ovarian tissue containing an early developing Graafian follicle. A similar condition was present in the left ovary. In the right tube, in the region of the fimbriated extremity, were two fragments of tissue lying free and separate from the tubal mucosa. Those fragments proved to consist of endometrial tissue not in a menstrual phase of the cycle. The specimen, it was contended, confirmed the view of J. A. Sampson, of New York, as to the causation of this condition.

The President said he regarded this specimen as the missing link in the pathology of endometrioma. Many observers had been trying for some time to find endometrium in the Fallopian tube, and now it was forthcoming. He had always believed that Sampson's view would prove the correct one.

Dr. Cuthbert Lockyer said this was the most convincing proof which had been seen up to the present. Several observers had found fragments of endometrium in the menstrual blood in the pouch of Douglas, but this to-night was the most convincing evidence of the transference along the tube of necrobiotic endometrium. But in accepting the implantation theory as one explanation of endometrioma, one must be careful not to push it too far. What the profession was awaiting was information as to a common genesis for all these and similar conditions.

Dr. W. W. King said he thought such a fragment would have difficulty in getting through the uterine end of the tube. He did not see why it should not have grown there. He found acceptance of Sampson's view difficult, as for damaged tissue to implant itself on undamaged tissue was unique in pathology.

The second specimen shown by Dr. Williams was a uterus showing multiple polypi of the cervix. The uterus was removed by vaginal hysterectomy. Examination showed nothing abnormal except that the cervix felt rough and irregular, and there was no bleeding on examination. A more complete examination under an anæsthetic showed that the cervical condition extended far up the canal, and that the roughness previously felt was due to large numbers of polypi. The specimen showed an unusual condition of the cervix; the endometrium was replaced by a diffuse growth of polypi, and the condition ceased abruptly at the level of the internal ostium. There was no evidence of chronic inflammation, therefore it was thought the condition was new growth.

(*Continued from previous page.*)

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Gliosarcoma in a Still-born Fœtus.—Ruptured Acute Pyosalpinx.

Mr. D. J. Malan gave a short communication on a case of gliosarcoma in a full-time still-born fœtus. There was nothing abnormal in the placenta nor in the amount of liquor amnii. No abnormality in the fœtal head was suspected, but when the fœtal head was opened it showed bilateral internal hydrocephalus. There was some tearing of the tentorium cerebri, but no signs of hæmorrhage. In the cerebral hemisphere was found a round lump, and enclosing it was a very much flattened cerebral cortex, ½ cm. thick, covered by smooth lepto-meninges. Another, smaller, gliosarcoma was found in the other side of the cerebrum. The doctor in this case had been blamed for causing the state of affairs by putting on forceps prematurely and damaging the baby. The real cause of the baby's death was the tumour. He advocated more routine examination of fœtuses, when it would probably be found that such occurrences were not so rare as they were supposed to be. He also gave a description of a ruptured acute pyosalpinx which occurred in the third month of pregnancy, the patient being 37 years of age. There was abdominal pain, great nausea, and some vomiting, with a blood-stained, offensive vaginal discharge. The temperature was 101° F., the pulse 96, tongue moist and furred, and the abdomen very tender. The uterus was enlarged to the size of a two-months' pregnancy. On doing a laparotomy free pus was found in the peritoneal cavity. The left Fallopian tube had a perforation 4 cm. wide, and pus was oozing from this rent.—Several members discussed the communications.

Puerperal Sepsis.

Papers on puerperal infection were read by Dr. H. J. Phillips (Monsall Hospital, Manchester) and Dr. L. Colebrook (London).

Dr. H. J. Phillips spoke on Rational Treatment of Puerperal Infection, and said his intention was to deal mainly with the results obtained from the treatment of a series of cases along certain constant lines. The work was done at the Monsall Hospital, which was Manchester's infectious hospital. Here 22 beds were set apart for puerperal cases, and the admissions during a year varied between 90 and 120. Every encouragement was given to send cases as soon as possible, and none was refused, yet still many were too advanced and serious when received. In his experience of puerperal infection he had been much impressed by the great amount of extra-uterine injuries suffered by these patients, and the gravely septic nature of the region when patients were brought. He was not now speaking of tearing of the perineum. On exposing the vagina, remains of a lacerated cervix covered with foul sloughs, teeming with micro-organisms, were frequently found. The uterus of such a patient could easily become infected, and if the local defences failed, the infective process could become widespread. Though the acid secretions of the vagina might keep micro-organisms inert, in the alkaline lochia and the body tissues they might rapidly show pathogenic properties. Merely to drain the cavity or attack the endometrium was not likely to produce good results; therefore he had hoped for some means of helping the uterine wall to drain itself by promoting a flow of lymph through it into the cavity. Some time ago he had the opportunity of seeing glycerine used in the uterus for this purpose, and it seemed to him it might solve the problem, as it was a powerful tissue dehydrant, and its viscidity enabled it to remain for a long time in contact with the tissues, while at the same time there was no danger to the patient. The mixture he used was a 10 per cent. solution of tincture of iodine in glycerine, the iodine promoting the flow of lymph into the cavity of the uterus. Most of the patients were drained in this way once daily, the more severe cases twice a day. In the first 100 cases the average number of applications was seven, the treatment being continued until all active inflammation had subsided. In this method the local condition was well exposed and could be thoroughly cleaned, and there had been a rapid healing of the lesions. The chief source of trouble was the paravaginal abscess associated with a badly torn vagina. Pus was found in the uterus in half the severe cases, usually only in small quantity, though in one case it amounted to 6 drachms. Often the doctor had assumed from the presence of a profuse purulent vaginal discharge that the uterus was draining well, the fact being that none was coming from it, the suppuration being high up in the vagina. The introduction of the iodine and glycerine tended to produce uterine contractions. In 130 cases in which he had employed lymph drainage (glycerine drainage) he had never explored the uterus, except for primary hæmorrhage; fragments of membrane, placenta, or decidua had come away in the manner spoken of.

Comparison of Results.

Dr. Phillips, for purposes of comparison, gave two series of cases and the results achieved. The first consisted of 87 cases which were treated by lymph drainage, and the second of 110 cases which immediately preceded the first named. In both the cases were of the same type and drawn from the same district. Before lymph drainage was done at the institution the treatment of these cases had been carried out on three main lines. The milder cases were dealt with expectantly—i.e., with vaginal douching, Fowler's solution, quinine, &c.; the more severe with anti-streptococcal serum or curetting. Of the 110 cases, 29 per cent. developed complications, 11 developing pus and needing operation; while of the 87 cases treated by lymph drainage, only 14 per cent. developed complications and only one developed pus. Dealing next with the mortality in the two series, that in the first 100 cases was 13 per cent., the lowest in the institution for many years; and all died of some condition which was already established when the patients entered the hospital. Also, since this method was inaugurated the average stay in the hospital had been greatly reduced, from 41·5 days to 26·2 days.

Acute Blood Infections: Laboratory Investigations.

Acting on Dr. Colebrook's suggestion, he had adopted two lines of treatment in cases with acute blood infections—namely, the intravenous injection of arsenical drugs, and the transfusion of immunised blood to help the patient's own defensive mechanism. The drug chosen was novarsenobillon. Disappointing results followed the use of small doses of arsenical preparation, large ones were followed by clinical improvement. He exhibited lists of cases giving many details.

Dr. L. **COLEBROOK** spoke of laboratory investigations which he had been carrying out on the same subject. He said that in considering what was the chief microbic agent of puerperal sepsis it was not necessary to go further than the hæmolytic streptococcus, which was probably the cause of 90 per cent. of the troubles of septicæmic cases and localised infections. There was no reason for supposing that puerperal sepsis was due to a special streptococcus. As to how the streptococcus usually gained entrance into the genital tract, it was generally taught that it was not normally present in the vagina, nor in the rectum, and he thought infection from both those sources must be rare. The problem here did not differ from that of surgical wounds generally. Ordinary non-hæmolytic streptococci were more easily killed by leucocytes than were the hæmolytic form. Was there any evidence that a woman's resistance to the streptococcus was lowered during the process of pregnancy and labour? There were now available means of knowing how efficient a person's blood was in killing streptococci, and it was found that there was no general tendency for the killing power of a woman's blood to be lowered during pregnancy and labour. He believed that blood invasions from the genital tract were more common than they were generally supposed to be. Blood in the capillaries had great power of killing off streptococci, and if a few of these organisms got through in the first few days of labour, if the woman's blood was normal, there was but little chance of those microbes surviving in the capillaries. But the woman's blood might not be normal, and in septicæmia the killing power of the blood was greatly reduced; it might be only 40 per cent. of the normal. The real reason was that in septicæmia the leucocytes were not normal ones; probably the microbes produced a toxin which was disabling to them. Then the microbes getting through would be able to survive. When a blood culture was done on a doubtful case of septicæmia, the bacteriologist should be asked to state how many microbes he found to the cubic centimetre; that gave important prognostic information. He had only seen one woman recover who had more than 100 streptococci per c.cm. in her blood.

With regard to local treatment, this, it would be agreed, was not at the moment all that could be desired. Two lessons learned in the war experiences were: that wounds infected with hæmolytic streptococci and containing damaged tissue and blood clot could not safely be left to themselves. Hæmolytic streptococci, as Sir Almroth Wright showed, could grow comfortably in damaged bloodless tissues and in blood clot. As the streptococci grew, the containing fluid lost all its bactericidal power, and at the same time the leucocytes were held back. Something of that kind must occur in the case of an infected wound of the genital tract. The worst cases of puerperal fever were those in which the lochia were suppressed and those in which instruments had been used and caused bruising of the tissues. And the war's second great lesson in this regard was the efficacy of fluid drainage, which Dr. Phillips had demonstrated in his series of cases.

Concerning general treatment Dr. Colebrook said that in septicæmia there were often millions of streptococci in the circulation, and the defensive mechanism of the patient was largely out of action. It was necessary either to have an agent which would kill off many streptococci and so give the leucocytes a chance to recover, or there must be an agent which would neutralise the toxins which were damaging and inhibiting the leucocytes. Antistreptococcic serum appeared to have no strong place; to do any effective killing of the bacilli, a pint of it would have to be given. With regard to drugs, the most hopeful of those he had worked with was neosalvarsan, and the killing power of that was pronounced in a strength of 1 in 100,000, reducing 526 streptococci per c.cm. to 3 in five hours. Concerning transfusion, one could not hope to save a patient by this alone. Reasons for this probably were that by defibrinating blood one deprived it of about 30 per cent. of its corpuscles and mixed it when transfusing with nine times the quantity of the patient's own blood. Still, he thought it was right to go on working at drugs and transfusions.

Prof. **LOUISE MCILROY** said the results she had had from carrying out Dr. R. Hobbs's treatment (injection of glycerine) had been extraordinarily good, drainage having been done for seven days. Most of the cases of puerperal sepsis were due to laceration. Recently she had been raising the patient's immunity by giving antistreptococcus serum and quinine before clearing out the uterus, and the results had been such that she intended to continue the practice. Results from blood transfusion seemed to last only four or five days.

MEDICAL SOCIETY FOR THE STUDY OF VENEREAL DISEASES.

A MEETING of this Society was held at 11, Chandos-street, W., on Nov. 27th, Dr. WILFRID S. FOX, the President, occupying the chair.

Medico-legal Problems in Relation to Venereal Disease.

Dr. F. G. CROOKSHANK read a paper on medico-legal problems in relation to venereal disease, which, he said, touched on the provinces of ethics, politics, sociology, religion, and jurisprudence, and could hardly be appreciated without some acquaintance with history and with human nature. The crux of the question was that, however loudly some might say that venereal diseases were not different from other diseases, human nature would never permit these diseases to be dealt with by the *ordinary* routine of notification and sanitary administration. Venereal disease was fundamentally one of the consequences of breaking the social-sexual code, and the occurrence of venereal disease in a population always seemed to be associated with the breaking of a social code, no matter what that code had been. He thought it might be taken as axiomatic that however the social or moral code might change, and whatever degree of promiscuity or liberality in sexual matters might be allowed—and, of course, the sexual and moral code had changed in an extraordinary way during the last ten years—yet the imputation against a person that he had venereal disease would always be actionable. To say of anyone that he or she was unchaste might at one time have induced social avoidance, though it by no means necessarily followed that it would always do so, but the presence of venereal disease would continue to make a person shunned by even the most degraded. He did not see how the lawyers could draft any Bill which, merely by making the communication of that disease to another person an offence, would be effective in the prevention of venereal disease unless doctors could definitely say, in more than a few cases, that the suspected person *must* have known himself or herself to be in an infective condition. If it was desired to constitute a new kind of offence it would have to be proved that there was guilty intention, and that the person knew what he was about. This meant that it would be necessary to prove warning. Could warning be proved unless communication had been made to some third person?

Mr. EWART WORT, Barrister-at-Law, pointed out that while in respect to some sexual offences the law usually required corroboration, a conviction in such a case as Dr. Crookshank had instanced would depend upon whether the doctor was to be believed when he said he had given warning, or the accused person was to be believed when he denied it, and from his own experience at the Bar the doctor's evidence would be accepted.

Dr. CROOKSHANK said that, at any rate, it would be impossible to induce lawyers to recognise as an offence an act of this nature unless it could be shown that the person who committed the act really understood his state and had been warned in respect of his infectivity. Germany and Sweden appeared to have adopted legislation in respect to the communication of venereal disease, and their experience must be valuable. While, no doubt, a medical examination before marriage would be an ideal arrangement, he could not help feeling that one could not go safely beyond the requirement of a statement on oath by the parties made at the very last moment. He recalled a case within his own experience of a man who only on his very wedding day discovered that he was suffering from venereal disease, the last illicit connexion having dated from three months previously. The very fact that some such declaration was required at the last moment might go some way to induce a feeling of responsibility. It seemed necessary, however, to fall back upon the continuation of the present state of affairs, even if there was occasional occurrence of the position so often alleged to be frequent, wherein Dr. A was aware that Mr. B had venereal disease and intended, in spite of all expostulation, to marry Miss C. In England a breach of professional confidence was not an offence in itself and so punishable, as was the case in some countries abroad. If a medical man broke professional confidence by saying that a certain person was syphilitic and so injured him, it was possible for that person to bring an action against him for slander or libel, but not for breach of professional confidence. The doctor (granted, of course, that he was sure of his ground) should, however, be prepared to take the consequences, which the speaker did not believe would be serious to himself under such circumstances, and to warn Miss C or her parents. In such difficult cases members of the profession should have the courage of their convictions. If they technically broke the law and uttered slander in order to prevent the marriage of a syphilitic to an innocent person he did not think that in the long run the law would punish them very severely, while there was nothing in the oath of Hippocrates to prevent any man conscientiously breaking professional confidence in such circumstances.

Mr. WORT dealt principally with the compulsion upon witnesses to give evidence in courts of law. There were certain exceptions to such compulsion. On the grounds of public policy, no husband or wife was compelled to make a statement which was the result of communication by the other. No person was compelled to give evidence in a court of law when the evidence would incriminate himself. And there was the third exception, the privilege which a member of the legal profession enjoyed in regard to communications made to him in the course of his professional activities. This last was an anomaly, but it was absolutely necessary by reason of the fact that without that privilege the administration of justice could not be carried on. It might be asked, why the distinction between the medical and the legal professions in this respect? But the point was that of all the information obtained by the medical man in the course of his profession, not one-thousandth part would ever be the subject-matter of litigation, while in regard to the communications made to a lawyer, every such communication carried the potentiality of litigation. This privilege of lawyers was not the privilege of a profession as such; it was the privilege attaching to a particular kind of communication. Dr. Crookshank had referred to the law in other countries. It was part of the penal code in France that any communication made by a doctor in breach of his professional oath was a criminal offence, but there was an exception—namely, when he was compelled to give evidence in a court of law. If further legislation was necessary in order to get to closer grips with the social problem put forward by Dr. Crookshank, it was for the medical profession above everybody else to educate the public up to the point of such legislation. Any legislation making it a penal offence to communicate this disease to an innocent person must take into account the state of knowledge of the person indicted. An analogous class of case in this respect was the receiving of stolen property, which was extraordinarily difficult to prove. The law had surmounted the difficulty by putting certain tests which the jury were instructed to apply to the particular case. One such test was whether the person had purchased the property at a very low price; if he had done so it might be justifiable to suppose that he knew it to have been stolen. Whether some similar tests could be applied to persons suffering from this disease was for the medical profession to state. In the case cited by Dr. Crookshank of Dr. A, Mr. B, and Miss C, the only possible action would be an action for slander, and to such an action justification was a complete defence. But there would be a further defence in the shape of what lawyers called qualified privilege. The difficulty with medical evidence, however, was that occasionally Dr. A went into the box and said one thing, and Dr. Z another.

Discussion.

In the course of the discussion Colonel L. W. **Harrison** spoke of the need for circumspection in relation to venereal diseases clinics. It would have a most disastrous effect if the public were deterred from coming freely to get treatment by the fear that there might under certain circumstances be a disclosure of their condition.—Dr. D. N. **Nabarro** put the case for legislation to compel parents to have their children who were congenital syphilitics treated.—Mr. **Wort** said that there was no specific legislation in this matter, but, of course, a parent could be prosecuted where it was proved by a medical man that a child was being wilfully neglected through not receiving treatment.

Exhibition of Clinical Cases.

Dr. H. McC. **Hanschell** showed two clinical cases, one a case of ulcerating granuloma in a Chinaman, which he had already shown eight months previously before the Society; and the other a case of congenital syphilis in a boy, which, in addition to the characteristic facies, showed necrosis of the maxilla.

Dr. P. H. **Manson-Bahr**, in alluding to the first of these cases, said that it was a very interesting condition and occurred in definite geographical areas in the tropics, being very common in New Guinea. It was also found in Chinese treaty ports, in South Africa, and in the West Indies. Dr. Hanschell's case was the sixth consecutive one he had treated during the last four years. There was no doubt whatever that antimony tartrate was specific for this disease, among others. The substance must be given by the intravenous route, and must be persisted in for months. It should be given in 1 or 2 per cent. solution, commencing with ½ gr. dissolved in 5 c.cm. of distilled water, and gradually increasing to the maximum tolerated dose. The maximum dose one could give was 5 gr. a week. Intolerance was usually shown by acute muscular pain. Local measures were of the utmost importance. Ulcerating granuloma had the peculiarity of spreading in one direction while retreating in another. It might burrow underneath the pubic region and extend in the scrotum. More recently he had used antimony tartrate in paraffin ointment; this was spread on the ulcerating surface, and left on for about two and a half hours, care being taken that it did not impinge upon the healthy surrounding skin. Antimony tartrate appeared to cause a considerable degree of local reaction and sloughing. In these cases one should never give up hope. A point to emphasise was the inadvisability of surgery. In one case in which the healing by medical treatment was successfully accomplished after three and a half years, surgery was practised at one point, and immediately expansion took place at the edges of the wound.

Dr. **Nabarro** referred to the second case shown by Dr. Hanschell. In all the cases he had had under his care at Great Ormond-street, numbering over 500 now, he had only in one instance seen necrosis occur in the position shown in the case exhibited that evening. There was no doubt that the boy had had also some gummatous necrosis of the bones of the skull. In a case of this kind he would advise that the cerebrospinal fluid be examined, and if it proved to be positive, salvarsan serum should be given.

LIVERPOOL MEDICAL INSTITUTION.

At a meeting of this Institution on Nov. 26th Dr. **John Hay** and Dr. **Phœbe Ince** communicated a short paper dealing with the uses of

Diathermy in Cardiovascular Disease,

more particularly in patients with angina, major and minor, in cases of high blood pressure with various manifestations of distress, and in one case of intermittent claudication. Some of the patients had been kept under observation over a long period and the effects of the diathermy had been noted for the last two years. Weekly records had been kept of the variations in blood pressure, both systolic and diastolic, in the heart rate, and in the clinical findings, showing the response to treatment. In most instances there was definite improvement, in some cases dramatic improvement. Not only were the pressures reduced as the immediate result of treatment, but when the course of treatment terminated the improvement was maintained. In nearly every instance, whatever the variations in blood pressure, there was marked subjective improvement. The response to treatment was much more satisfactory in the males than in the females. In considering these results there appeared to be no doubt as to the benefit derived from this line of treatment.

Mr. R. E. **Kelly** read a paper on

Grafts and Grafting.

After a brief historical survey he considered the various methods of skin grafting. He said that the essential features in a successful Thiersch graft on a granulating area were as follows: 1. The area must have a flat instead of a heaped-up edge. This could be obtained by Beck's method of protecting the growing epithelial margin by strips of half-inch Z.O. eye strapping for a few days. By this means the exuberant granulations were flattened out and the marginal cranny of sepsis obliterated. Further, it saved the delicate new epithelial edge from being pulled off with the dressing. The last dressing should consist of 50 per cent. alcohol. 2. The granulating area must neither bleed nor weep. It should show neither sloughs nor bruises. 3. The operation should be done with absolute dryness. As Ochsner showed, there were disadvantages in moistening the razor with saline, glycerine, or antiseptics. No dressing was needed. Around the area a nest of gauze was placed and on top of this, but not touching the grafts, a piece of celluloid was fastened down with strapping. In immediate grafting Mr. Kelly spoke of the value of a stent or dental wax cast over the graft so as to apply even pressure and prevent the exudation of serum between the bed and the graft. He then spoke of the inlay grafts of Esser, Gillies, and Pickerill, and showed examples of eyelid grafting for ectropion and whole skin grafts for the deformity following lupus of the nose. Photographs of the tubed or jug-handle graft were shown illustrating the restoration of a lower lip lost by cancrum oris in infancy. Mr. Kelly spoke of Gallie's work on the tensor fasciæ femoris and its multifarious uses as a grafting material. He showed cases in which he had used it for uniting a fractured patella, for repairing an extensive post-operative hernia, and even repairing an inch gap in the extensor secundi internodii pollicis tendon. In the last case the result after a year was complete and strong movement of the terminal phalanx in complete contrast with a similar operation done for the flexor tendons of the palm. Despite primary union the palmar operations had failed. There appeared to be too much fibrosis and the grafts had stuck to the palmar fascia. Cartilage grafts for nasal deformities were next considered. They were extremely useful in accidental depressions, but were apt to be disappointing for cases of congenital syphilis. Finally, Mr. Kelly described his method of wedge-shaped bone grafts. He had used this for the fibula to prevent the slipping of the peroneal tendons and in the tibia to bridge a gap of an inch or so. The paper was illustrated by lantern slides and the result shown in a preliminary exhibition of patients.

Improvements at the Metropolitan Hospital.—With the approval and help of King Edward's Fund the Metropolitan Hospital in the Kingsland-road, which serves the poor and densely populated districts of Shoreditch, Haggerston, Hoxton, Hackney, Bethnal Green, and Stoke Newington, is about to make improvements which will cost £54,000, of which nearly one-half has still to be raised. The principal work is the erection of a home for the nurses, who at present are scattered over "a jumble of broken-down property," most inconveniently situated, with passages so dark that gas has to be kept burning continually, but there will also be two new accident wards.

JAMES MACKENZIE INSTITUTE FOR CLINICAL RESEARCH, ST. ANDREWS.

At a meeting of the Institute on Nov. 24th Dr. Ivy Mackenzie gave an address on

Insulin in the Treatment of Toxic Delirium.

He explained that by toxic delirium he meant the condition recognised in psychiatric practice as "exhaustion psychosis," and sometimes referred to as toxic confusional insanity or amentia. The condition itself might be readily recognised by those who had an opportunity of seeing a large number of mental or nervous cases. It supervened on the basis of chronic nervous disorders of a hysterical or neurasthenic character; it sometimes occurred in the puerperium and also after the production of an artificial menopause. It began suddenly with excitement, sometimes of a violent character; the excitement passed into delirium, and if this stage were survived it was followed by a period of confusion which tended to clear up after a time. This form of illness he had seen only in women, and during the last year there were 18 cases among the 350 women who had passed under his notice in the mental observation wards in the Eastern District Hospital, Glasgow.

Hitherto he had treated such cases with chloral with some success. A year ago, following a discussion with Dr. J. H. Burn on the action of insulin and its relation to other internal secretions, he employed that drug in three cases. The beneficial effect was beyond doubt and compared favourably with its influence in diabetes mellitus. Treatment was begun with 5 units thrice daily, and this was gradually increased to 7, 10, 12, and sometimes to 15 units thrice daily. Chloral was employed, but mostly at night only. In some cases the patients appeared to be more susceptible to the poisoning action of chloral when insulin was given. One death occurred, and that in a woman who had also chronic renal disease and arterial degeneration; 14 had been discharged recovered, although some of these exhibited signs of what was probably their "nervous state" prior to the acute illness; three were convalescing; no patient suffering from this condition had been certified for asylum care since the treatment was initiated. Referring further to the clinical aspects of the cases, it was pointed out that fever was sometimes present, and that a leucocytosis of 10,000 to 20,000 was present in all except two. The blood-sugar curve was abnormal at some time in every case. It was frequently of the diabetic type, but occasionally there was an abnormally low curve, as, for example, in one case where the estimation was 0·05 per cent. on the fasting stomach, 0·09 per cent. at the height of the curve after 50 g. of glucose, 0·075 per cent. after an hour, and 0·06 per cent. after two hours. Notwithstanding the low estimate insulin was given, and after a week, when the patient had made considerable progress toward recovery, the curve had risen and showed the diabetic features with 0·135 per cent. on the fasting stomach, rising to 0·21, 0·25, 0·18, and 0·165 at half-hourly intervals. A striking feature of the metabolic abnormality was the presence in some cases of a blood-sugar content of 0·3 per cent. with no sugar in the urine, and no evidence of renal disease. The participation of the endocrine system in the upset of metabolic equilibrium which characterised the illness was probable. Reference was made to the experimental and clinical evidence of the relation of the ductless glands in diabetes, and in the case of toxic delirium it was pointed out that the abnormality of the ovarian system in all likelihood played a part. It was likely that the therapeutic use of insulin would be extended beyond the limits of diabetes mellitus, and that it would afford a means of approaching a solution of the problems not only of the ductless glands, but of a whole series of syndromes in which disordered metabolism played a part.

Reviews and Notices of Books.

Modern Medicine, Its Theory and Practice.

An original contribution by American and Foreign Authors. Edited by Sir William Osler, M.D., F.R.S. Third edition, thoroughly revised. Re-edited by Thomas McCrae, M.D., Professor of Medicine in the Jefferson Medical College, Philadelphia, assisted by Elmer H. Funk, M.D., Assistant Professor of Medicine, Jefferson Medical College, Philadelphia. Vol. I.: Bacterial Diseases; Non-bacterial Fungus Infections; the Mycoses. London: Henry Kimpton. 1925. Pp. 845. £12 12*s.* per set of six volumes.

In his preface to the first volume of the new edition of this monumental system of medicine Dr. McCrae states that at about the time of the onset of Sir William Osler's last illness (some six years ago) correspondence was taking place as to the possibility of a third edition. It was a gratification to him to feel that this was being called for. Dr. McCrae adds some interesting personal notes as to the origin of the work which was to bring such widespread fame to its editor. At the first consideration of the possibility of his bringing out a system of medicine, Sir William Osler felt apprehensive that it might be too great an additional burden in his busy life, but finally consented to undertake it. With the work once started he became much interested and the success of the first and second editions pleased him greatly. His conception of the right article for a system was a discussion of a subject at a length between the brevity in a text-book and the extensive consideration possible in a monograph, with the needs of the general practitioner kept well in mind. For the most part he was able to inspire his contributors with his own ideals, and the result was a well-balanced work which merited the popularity it received.

In the 12 years that have elapsed since the first volume of the second edition appeared many changes have occurred in our knowledge of disease, and new diseases, such as botulism and epidemic encephalitis, have come into prominence. The discovery of the ætiological agent or further study as to the cause has altered many points in the control and treatment of some diseases, such as scarlet fever and bronchial asthma. A new therapeutic aid has come into prominence, altering the whole aspect of the treatment of diabetes mellitus. In the present edition the discussion of the pathology of tuberculosis by Dr. A. K. Krause is a departure from the traditional method. Dr. Du Bois gives a clear and comprehensive concept of the modern problems in metabolism. As to the subject-matter of this first volume, it has been to some extent rearranged. With the exception of the short section on fungus infections, the whole book is devoted to bacterial diseases. Scarlet fever has been placed among these, but the other exanthemata and fevers of doubtful causation, including rheumatic fever, are no longer included. The articles on typhoid fever, lobar pneumonia, and tuberculosis occupy more than half of the volume; the first two of these retain their old form, but have undergone revision and enlargement. As already stated, the section dealing with the pathology of tuberculosis has been rewritten, and a large amount of new material has been incorporated in the sections on other aspects of that disease. The shorter articles contained in the second half of the book have received numerous additions embodying the advances of the last 12 years.

Dr. McCrae has rendered great service to the medical profession in keeping up to date so valuable a work and in perpetuating the memory of its first editor. The essay on the Evolution of Internal Medicine, written by Osler in 1907 as an introductory chapter to the first edition, and omitted from the second, has been restored, and may claim a high place as a classic in the literature of the history of medicine.

THE MODERN PRACTICE OF TOOTH EXTRACTION.

By LESTER RICHARD CAHN, D.D.S. New York: The Macmillan Company. 1924. Pp. 132.

THE fundamental principles of tooth extraction are based on the application of mechanics to the anatomy of the teeth and jaws. The different methods of leverage utilised in extraction by forceps vary according to the nature of the roots and to the resistance offered by the alveolar bone. Thus the operation of tooth extraction must be to some extent stereotyped. Yet in practice we find that there is perhaps no part of dentistry in which there is such a wide variation of method on the part of individual dentists. Manual dexterity and the ease of constant practice count for much; one operator using methods to all appearance heterodox may be far more successful than another who uses the orthodox method. Manuals on tooth extraction, of which there are many, usually represent the practice of the individuals who write them, and since these are generally dentists of large experience, their books have a personal interest often lacking in more academical publications.

This volume may be taken to represent the American methods, which differ from those current among the majority of British dentists. The actual technique employed does not appear always to be the most efficient mechanically, though doubtless, in the author's hands, it yields excellent results. Some of the forceps recommended by Mr. Cahn appear clumsy when contrasted with English forceps. He advises the use of bayonet-pattern forceps for extracting upper incisors. But the straight forceps commonly used in this country, being applied in a straight line with the long axis of the tooth, surely represent the maximum efficiency of force with the minimum risk of fracture, whereas the bayonet type, though admirably adapted for extracting upper third molars, are less mechanically efficient for front teeth. It is curious to find no reference to the use of the straight elevator for the removal of lower wisdom teeth, in the use of which the backward curve of the roots, which offers so formidable an obstacle to the use of forceps, is utilised to facilitate extraction. The statement that no tooth should be extracted unless previously radiographed is surely a counsel of perfection and probably not feasible even in America, where an X ray outfit is much more often possessed by the dentist in general practice than in this country. The use of an elevator for extracting upper third molars appears to us as too dangerous a procedure to be commended for general use. The advice to pack a socket *tightly* for the treatment of hæmorrhage is unsound. It invariably leads to infection of the socket with the risk of secondary bleeding. Packing a socket for hæmorrhage, unless as a last resort, is to be deprecated. The statement that "whole blood taken from a parent, or in urgent necessity, from the operator himself, injected into the patient will stop the hæmorrhage in some cases" lacks the important proviso that the donor must be of the same blood group as the recipient. There is a chapter on blood pressure which contains useful information not generally included in a dental text-book.

THE SPHENOIDAL SINUS.

Le Sinus Sphénoïdal. Par GEORGES CANUYT, Professeur de Clinique Oto-Rhino-Laryngologique, et JEAN TERRACOL, Chef de Clinique Oto-Rhino-Laryngologique à la Faculté de Médecine de Strasbourg. Paris: Masson et Cie. 1925. Pp. 278. Fr.25.

THE introduction to this book contains the surprising statement that the sphenoidal sinus has been neglected in recent years, "secluded in the depths of the nasal fossæ, it has likewise been secluded in the folds of forgetfulness." The authors admit that the anatomy of the posterior sinuses has been thoroughly studied and mention the famous anatomical collection of Onodi, which has been acquired for London, but say that exploration and surgery of the sinus have scarcely entered into the region of current practice. That, at any rate, can hardly be said to be the position in this country, and the authors pay adequate tribute to the work of Dr. P. Watson-Williams, whose method of exploration they have adopted. The anatomy of the sphenoidal sinuses is dealt with very fully, together with their variations in size and shape, and the relations with neighbouring structures; this section is illustrated by numerous diagrams, some of which would be easier to interpret if the plane of section were indicated. Methods of examination and exploration are discussed in the next section; the importance of thorough shrinkage of the mucosa with cocaine and adrenalin is insisted on. The authors would have done well to have given an account of their technique of producing local anæsthesia of the soft palate for posterior rhinoscopy, instead of merely giving a reference to a communication in the *Archives Oto-Rhino-Laryngologiques*; they appear to employ a palate retractor, but do not describe it.

A short description is given of a method of transillumination of the sphenoidal sinus by means of a long light-carrier and a pharyngoscope, but it is rightly stated not to be very reliable. The chapter on radiography of the sinus is among the best in the book and includes details of many different methods and angles of approach; some radiographs are illustrated, taken in the chin-vertex line, which show good definition of the cavities, and the intrabuccal film is also well described and illustrated. Of the surgery of the sphenoidal sinus, two methods of approach are mentioned and fully discussed, the "turbinal" and the "septal" routes; the authors consider that the septal route is the easier and the more surgically precise, but that it has the disadvantage of not giving access to the posterior ethmoidal cells, which often need to be opened with the sphenoidal sinus. No mention is made of the simple opening through the ordinary nasal passages, and the authors do not apparently consider this an efficient method of treatment. There is a good table of contents, but no index; a full and useful bibliography is appended.

TUBERCULOSIS.

Development of Our Knowledge of Tuberculosis. By LAWRENCE F. FLICK, M.D., LL.D., Co-Founder of the Rush Hospital for Diseases of the Chest, &c., Philadelphia. Published by the author at 738, Pine-street, Philadelphia. 1925. Pp. 783. $7.50.

Dr. Flick has produced a monumental volume on the history of tuberculosis, beginning with the Code of Hammurabi written 2250 B.C., and ending with the work of the British and German Royal Commissions on Tuberculosis at the beginning of this century. The amount of material amassed is large, and as tuberculosis meant a different thing to the physician in different epochs of history, the value of the material collected together must obviously vary a good deal. Dr. Flick suggests that the Hebrew race was one of the first to become immunised to tuberculosis and that this racial immunisation gradually extended westward through the Greek race to the Romans. References to tuberculosis in the Hippocratic writings are dealt with fully, as also is the work of Galen. Between Galen and Sylvius there was little real advance in our knowledge of this disease, but from the days of Sylvius onwards the amount of writing on the subject has been truly prodigious. Dr. Flick gives extensive quotations from Morton's "Phthisiologica," and devotes chapters to Sydenham, Boerhaave, Mead, Reid, Stark, and others of the eighteenth century. The latter part of the eighteenth century produced new schools in the work of Baillie, the Hunter brothers, and the early morbid anatomists on the one hand, and in the work of Auenbrugger, the inventor of percussion, on the other, thus creating a new conception of tuberculosis. Throughout the early part of the nineteenth century this work, helped greatly by Laënnec, went steadily on, culminating in the introduction of the compound microscope which made possible the work of Virchow and cellular pathologists, and subsequently that of Pasteur, Koch, and the bacteriologists.

The book has little to say about the statistical side of the development of our knowledge of tuberculosis, and we note with regret the absence of references to the bills of mortality which cast such illuminating light on the study of disease in the early nineteenth century. Nor can we find mention of the work of Pott, Addison, Bodington, and Cornet, all of whom made no mean contribution to the study of tuberculosis. The real difficulty in such a history is that of assimilating and sorting the mass of information, tracing the development of men's minds, and the influence of the various great schools of medical learning through the centuries. The author has not always been quite successful in this respect. The book is, however, a most laborious production and contains much important matter, including long quotations from standard texts.

Midwifery.

Third edition. By Ten Teachers. Under the direction of Comyns Berkeley, M.D., M.C. Camb., F.R.C.P. Lond. Edited by H. Russell Andrews, Comyns Berkeley, and J. S. Fairbairn. London: Edward Arnold and Co. 1925. Illustrated. Pp. 778. 24*s.*

"Ten Teachers" has already made itself so familiar and welcome a text-book of midwifery that it is not surprising to receive a third edition within eight years of the first. No introduction of the book is needed. It belongs to the increasing group of joint compilations, and the greatest pains have been taken to reap the benefits and avoid the disadvantages of this method of book-production. The present edition has been thoroughly revised and the illustrations enriched by a number of new skiagrams. So much work has been done recently on metabolism that the chapters on toxæmias of pregnancy have been largely rewritten and preceded by a brief but very clearly expressed review of normal protein and fat metabolism. Since the last edition the Section of Obstetrics and Gynæcology of the Royal Society of Medicine have investigated the subjects of eclampsia and Cæsarean section and their results are incorporated. The chapters on infant feeding have been remodelled and constitute a clear and concise exposition of the most up-to-date views on this difficult subject.

The whole work is written from the point of view of the student and practitioner and provides just those practical details that the latter needs in his everyday practice. To those who do not already know it the book can be cordially recommended.

The Changing School.

By Philip Boswood Ballard, M.A., D.Litt., Author of "Mental Tests," &c. London: Hodder and Stoughton. 1925. Pp. 332. 6*s.*

In Dr. Ballard's survey of evolution in educational methods one finds the product of long experience and a progressive spirit, with a humour that possesses the essential quality of unexpectedness. A chapter on Floggers, Ancient and Modern, is not without sympathy for the difficulties of the flogger, and draws a satisfactory picture of the change that has taken place since both parent and pupil felt and showed hostility to the work of the London elementary school teacher. Such live questions as the theories of punishment, the utility of formal training, and the teaching of the classics are handled with ample discussion on all sides. Among many fresh points of view is the admission that scholars of to-day are less accurate than those of the 'eighties, with the defence that accuracy in the past was gained at the expense of other useful qualities. Certain chapters indicate that Dr. Ballard writes primarily for teachers, but the book is not pedantic, and provides useful reading for those of us who note, perhaps with misgiving, the disappearance from the school curriculum of such honoured acquaintances as the works of Euclid, or who find that in some other study the young folk of to-day no longer follow paths that we once regarded as hallowed by tradition.

JOURNALS.

Annals of Medical History. September, 1925. New York: Paul B. Hoeber. Pp. 205–318. $2.50.—This, the third number of Vol. VII., contains many interesting articles. The first, by Sir Humphry Rolleston, deals with the life and works of Caleb Hillier Parry, the well-known physician of Bath, distinguished not only by his scientific knowledge, but also by his having been the father of William Edward Parry, the famous Arctic explorer. Caleb Parry received his medical education in Edinburgh, graduating as M.D. in 1777, his thesis being a dissertation upon hydrophobia. In 1778 he married, and in the following year settled in Bath. He soon became successful, and some ten years later was making from £300 to £600 a month. One of his most remarkable pieces of work was a description, published after his death, of eight cases of exophthalmic goitre under the heading "Enlargement of the Thyroid Gland in Connexion with Enlargement or Palpitation of the Heart." For the last six years of his life he was crippled by the effects of a cerebral hæmorrhage, but although his speech was much affected his mind remained clear.—Of other papers, Dr. W. G. A. Robertson contributes one upon the "receipts" of that odd personality Sir Kenelm Digby, privateer, courtier, an original member of the Royal Society, and writer on medicines.—Dr. D'Irsay and Dr. H. B. Allyn write respectively upon the Black Death and the Mediæval Universities, and the Social and Economic Results of the Black Death. As regards the first paper we think that Dr. D'Irsay is in error when he says that the "Universities of Latin Christendom were, in the middle of the fourteenth century, in possession of the Hippocratic Corpus . . . ." There is but little evidence to show that works of Hippocrates other than the Aphorisms and the other treatises commented upon by Galen, De Prognosticis and De Regimine Acutorum, were known at the universities, even at so medical a university as Montpellier circa 1350. Incidentally, the quotation from Hippocrates given at No. 15 of Dr. D'Irsay's bibliography is so full of misprints as to be unintelligible.—Dr. Allyn's paper is interesting, but it would seem that FitzRalph's statement that there were 30,000 scholars at Oxford in his time, and that the numbers fell to 6000, must in spite of Cardinal Gasquet's apparent endorsement be disbelieved, in view of Rashdall's statements in his Universities of Europe in the Middle Ages.—Dr. J. M. Ball writes upon Ether Tragedies in reference to Morton and Wells, and above all to Dr. C. T. Jackson. Jackson suggested ether as an anæsthetic in 1846, and when he found that he had been anticipated by a then unknown country doctor, Crawford Long—who, in 1842, removed a tumour under ether—he gave Long the credit which was his due.—Mrs. Long Tayler, a daughter of Crawford Long, writes a charming account of her father.—Dr. J. M. Hayman gives the text and translation of Malpighi's treatise on the structure of the kidneys.—Among the reviews is an appreciation, well deserved, of three works by Dr. W. H. S. Jones—namely, his edition of two volumes of Hippocrates in the Loeb Library, Malaria and Greek History, and the Doctor's Oath.

Revue d'Actinologie. Paris.—The growing importance of actinology as a branch of medical therapeutics is ample justification for the new French *Revue d'Actinologie*, the second number of which has just been issued. It is appearing at present every three months and is published by L'Expansion Scientifique, 23, Rue du Cherche-Midi, Paris VI. In addition to numerous original articles on the technical, biological, therapeutic, and hygienic aspects of the subject, the editors contemplate including an analysis of all important publications dealing with radiation.

THE LANCET.

LONDON: SATURDAY, DECEMBER 12, 1925.

CRITICISM OF THE GENERAL MEDICAL COUNCIL.

Criticism of the General Medical Council has been the inspiration of articles and letters in many journals of varying status and aim during the past week. We notice appeals in the press, and we have received them at this office, that we should contribute something in the nature of a reply from this journal to the charges which have been levelled at the Council for this offence or that default, and especially for removing certain practitioners from the roll of the medical profession. If only we were allowed to submit the case of a particular practitioner to scrutiny, it would not be hard to collate the facts, as they were laid before the General Medical Council, with the wording of the relevant Acts of Parliament, and then to come to an honest decision, right or wrong, as to the justice of what the Council had done. But unfortunately those who explicitly ask for our views do not confine themselves to the alleged wrongs of a particular practitioner, or even to the exercise, harmfully in their opinion, of any specific function of the Council; nor are the concrete offences or groups of offences which may bring a practitioner under the disciplinary attention of the Council made the subject of a definite complaint. The various articles, like the letters which we have received, are not possibly susceptible of reply, because they start such a multitude of different subjects. In one article fault will be found not only with the actions or attitudes of the Council, but with its constitution and its mode of election; in another the blindness of medical leaders to the virtues of the general mass of practitioners is deplored, and a recipe is given for the production of leaders of a better sort; in another the need of advertisement is dwelt upon in the interests of the public as well as of the doctor. Some ask that the General Medical Council should be composed, to various proportions, of laymen; some that medical members of the Council should be elected by laymen; some that lay members of the Council should be nominated by different lay authorities; and some that all the Council should be elected by the general vote of the various medical activities represented and not by the governing bodies of university faculties, colleges, and corporations. The avowedly hostile critics of the Council are so little unanimous that certain of them can be considered to have answered the accusations of others; but one abstention they display in common—they make little or no reference to the possible spread of abuses which are prevented by the statutory actions of the Council. The Council is described as a "trades-union," a "tyranny," or an "anachronism," but the fact is unacknowledged that without the procedures which the Council has adopted unconscientious doctors might either impose on the public with unwarranted claims, or provide the public with the ministrations of unqualified men, while taking fees for medical services. These procedures are of the highest public value, and in our opinion the fair and fearless way in which the necessary duties have been discharged should have earned the Council public gratitude.

The case of Dr. W. Lloyd has determined most of the recent attacks upon the Council. The case, as presumably all our readers know, is that of a qualified medical man who is held to have secured professional advantages through an article in the lay press, not, however, written by himself. A statement of the case was made in the House of Commons by Mr. Neville Chamberlain last week (see p. 1259) and can be compared with the summaries of the proceedings before the General Medical Council in our own columns and in those of the *British Medical Journal*, when it will be seen that the charge presented certain characteristics, novel in themselves, making it inevitable that a decision against the practitioner would be received with surprise by many. Now there is no action of the General Medical Council which more, and more regularly, excites adverse comment in the press than the exercise of a power which appears to make for suppression of information. This is perfectly intelligible, and this is why all the penal cases, heard by the Council, which have been or have appeared to be on all fours with the case of Dr. Lloyd, have received similar publicity, and to some extent have drawn upon the Council similar opprobrium. There are limits to the criticism of the Council, and it has not been said by anyone that there is no need, in the interests of the public, for any authority to watch over the dissemination of medical information; but when the medical profession, through the Council, supplies that authority its employment is always resented. The critics of the Council seem to consider either that the Council possesses no right to prevent any medical man from communicating any sort of article to the lay press; or that, if the Council has such a right, the right should be withdrawn until the Council is reconstituted, so that the exercise of its authority should have some public endorsement. These deductions are forcible but not logical. In the public interest there must be some way of preventing men who happen to possess medical qualifications, and therefore to be able to speak as doctors, from assuming the position of medical experts and thrusting on public attention details of new treatments, whether devised by themselves or by others. Such proceedings must do, and indeed have done, great harm, while the medical profession, as the only body able to judge of what is new and valuable, should be expected to prevent the raising of false hopes, the exploitation of methods doomed to failure, and even the undue enhancement of individual reputations. And every responsible editor on receiving a communication from a doctor to say that he has discovered a cure acts on these identical principles: he asks a medical man whom he trusts what chances the alleged cure holds out and what professional standing the contributor enjoys. There should be no doubt about the offence committed in cases where a practitioner assumes in the lay press the position of being able to serve the public in some way better than his fellows can. This form of advertisement is a public danger and must be stopped by the Council. But there is another sort of medical article which, when it is published in the lay press, appears to fall under the ban of the General Medical Council, and we admit that we regret the fact. We mean general pronouncements on topics of health, couched in such language that the public is helped practically by reading them, and can understand the directions in which medicine can help them further. Such articles gain in value if responsible signatures are attached to them, and it is the signed medical article from the best sources which the lay press desires, quite naturally, to be able to put before readers. It is thus at one and the same time a good thing and a bad thing that medical articles should appear in the lay press with medical signatures attached, and much of the resentment which has been excited against the disciplinary decisions of the General Medical Council has been due to the non-existence of any methods of discrimination. Ought the Council to be able to exercise a discretion, ensuring that the appearance of articles of public value should not be made the subject of disciplinary supervision, while trusting both the editors and the contributors to be inspired in the circumstances by the wish to benefit the public and not to exploit the individual?

The "Warning Notice" adopted by the Council in 1923 may be held to be abused when the spread of useful information is confused with the arts of the advertiser. That is patently true; but so is it true that, if the Council should attempt to draw up rules indicating that certain articles signed by medical men can be published in the lay press without offence, while other articles, so signed, cannot receive similar treatment, charges of partiality would be immediately made, would be extremely difficult to refute, and would endanger the reputation of the Council for fearlessness—that exact fearlessness which we consider is the quality in the Council which has given rise to so much irritation. It has been indicated that the kind of medical article which might well be published for the general benefit would naturally be written by a leader of the medical profession, and that is obviously the kind of article which the better lay journals require for their readers. Any rules under which these articles should appear to be exempt from the adverse attitude of the Council would be interpreted as ensuring for well-known members of the medical profession a measure of publicity and a security from reproach which are denied to less prominent people. For this reason we cannot believe that any alteration in the practice of the Council could meet the dilemma satisfactorily; while no rules will ever try out the hearts of men. Nor do we see that the appointment by Parliament of any committee of inquiry would assist either the public or the medical profession in the particular circumstances we have been dwelling upon. But the convenience of such an inquiry would be the public ventilation of the circumstances that have led to so much public heart-stirring. If some committee possessing the public confidence, and with a definite category of references, were to make a pronouncement, the disciplinary functions of the General Medical Council might cease to provide regularly an outburst of criticism, which is not confined to the Council, but includes practically the whole medical profession in charges of intolerance.

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VETERINARY RESEARCH AND HUMAN MEDICINE.

The story of a South African farm could, it is said, have been told in three words—drought and locusts. But this is by no means the whole of the story; the stock-raiser of experience could add many more chapters on the vegetable and animal pests which used to render his calling such a precarious one. Indeed, most of the minor horrors of farming seem to be rife in South Africa; and yet on the whole the farmers prosper, and the amount of land under cultivation and of stock being raised increases every year. The explanation lies in the help in combating pests and diseases given to the farmer by the Department of Agriculture of the Union through its Division of Veterinary Education and Research. The main laboratories and experimental farms of the Division are at Onderstepoort, near Pretoria, and we give elsewhere in this issue some account of the manner in which a triple function of routine, research, and education is there fulfilled. Anyone who notes the scope of the activities of the Division must be impressed with the important part played by veterinary science in the life of the subcontinent; but however great the needs of the community, it is hardly likely that the institute for veterinary research at Onderstepoort would have been expanded to such a scale had it not been for the fortunate coincidence of the man capable of developing it and the Government capable of appreciating the man. Paul Kruger recognised the genius of Arnold Theiler and gave it full play; later, Milner, Botha, Smuts, and Herzog pursued the self-same policy. The result is an institute of comparative pathology where is being carried out research of importance not only to veterinary but also to every other branch of scientific medicine.

The extraordinary value that work under these conditions may have is easy to perceive. The student of human diseases sooner or later turns to the experimental method. It is inevitable that this should be so. The time must come when the question arises, What would happen if such a reaction were modified in such a way? and the experimenter seeks to produce infection of a laboratory animal. But he is then met with the very reasonable criticism that he is no longer dealing with disease as it naturally occurs. The infections produced in his laboratory animals differ fundamentally from their very inception from those occurring in human beings; the whole course of the disease is different, and the fallacies inherent in this method of investigation may be so great as to render it worthless. It is for this reason that the necessity for the closer study of diseases occurring naturally in animals is so urgent. The elucidation and cure of such diseases as horse-sickness, lamziekte, quarter evil, and the like is of immediate practical importance, but it is still more important for the veterinary scientist to study by the experimental method disease as it occurs naturally. If he wishes to produce active immunity he can work with attenuated living viruses. If he wishes to investigate that enormously important subject the infections of mucous membranes, he has unimpeachable material at hand; he is not reduced to swabbing a rabbit's throat with pure cultures of streptococci, or feeding the creature with bile and typhoid bacilli.

It is thus from a broader point of view than the merely utilitarian that the development of a living science of comparative pathology is so desirable, and it is Sir Arnold Theiler's peculiar merit that he has had the vision to appreciate this. Onderstepoort was founded to meet the needs of the farmers, and nothing is allowed to interfere with the routine duties of the institute. But always the ideal of research has been upheld by the director. To him no routine investigation is so dull and hackneyed that it ceases to ask a question; no problem is either too difficult or too elementary to merit consideration. The whole institute is permeated with his controlled enthusiasm, and it is a research centre of which any country would be proud.

EPSOM COLLEGE.

Dr. RAYMOND CRAWFURD, as Chairman of the Council of Epsom College, addresses our readers with eloquent pertinacity on another page. In dealing with the progress of the College during the past year he acknowledges the support of many additional annual subscribers, and hopes that in the year to follow a still larger number of new supporters may present themselves. We share his hope, for the College does splendid work, and a large subscription list must be always the backbone of the resources necessary to maintain institutions of which it is a fine example. Good fortune in legacies and benefactions is to be welcomed as implying public confidence, but legacies necessarily are accompanied with the loss of good friends, while benefactions when they arrive, though they possess the charm of unexpectedness, have the drawback, from a treasurer's point of view, that they cannot be counted upon. A large and regular income from subscriptions is the ideal of every treasurer, so that plans for improvement and development can be entered upon with the surety that implies not only a successful but an economical carrying-out. Dr. CRAWFURD indicates many directions in which Epsom College is developing and in which provision should be made for further material improvements, but of these none can appeal more directly to medical men than the proposal to build a new infirmary for the school. The present infirmary is not constructed according to the requirements either of modern medicine or up-to-date nursing, and, moreover, is not economical to run. The provision of a new infirmary would cost from £15,000 to £20,000, a serious sum for the contemplation of the College authorities, but one which wider support from the medical profession would soon render available. The best provision for the sick in a population like that of Epsom College, which is increasing under steady success, is a responsibility upon the medical profession which will be recognised readily. It is a point worth noting, moreover, that the present infirmary when vacated would give accommodation to 45 more boys, an addition to the total number of the school which would be a financial economy, bringing in more money and entailing no commensurate cost; admission would also be provided for some 10 per cent. of a gratifying but over-large waiting list.

We may be repeating words which we have written in substance on previous occasions, when bringing before our readers the claims of Epsom College, but it should never be forgotten that the greatest anxiety which the medical man may have is in regard to the education of his children. He pursues a profession which even after an extended period of practice may not enable him to make large savings; further when success arrives, outgoings maintain a proportion which renders wealth a rare occurrence; and any physical incapacity may remove all chances of practice. Everything should be done to ensure education for the children of our colleagues, and that provided at Epsom need fear no comparisons with the work of other big public schools.

ORDER OF ST. JOHN OF JERUSALEM AND THE BRITISH RED CROSS SOCIETY.—At the last meeting of the Joint Council the resignation of Dr. F. N. Kay Menzies as Director of the Council's Hospital and Medical Services Department, in consequence of his appointment as Medical Officer of Health for the County of London, was accepted. At the same meeting Mr. R. H. P. Orde, B.A., was appointed Acting Director of the Hospital and Medical Services Department.

Annotations.

"Ne quid nimis."

CONSOLIDATION OF WORKMEN'S COMPENSATION ACTS.

THERE is good ground for hope that a Bill to consolidate the Workmen's Compensation Acts will pass through Parliament before Christmas. Anyone who tries to work at present with the original Act of 1906, overlaid and interwritten with its many subsequent amendments, has a difficult palimpsest to decipher. Moreover, the whole subject has now emerged from the tentative and experimental state and has been shaped by experience into something recognised as workable and reasonably permanent. It was time, therefore, to restate the law in a convenient form. The new Bill clears away the 1906 Act, the two Silicosis Extensions of 1918 and 1924, the Illegal Employment Act of 1918, and most of the amending statute of 1923. The principal surviving passages of the last-named enactment which the Bill does not propose to repeal are the provisions for amendment (by the Registrar of Friendly Societies) of the scales of compensation under certified schemes, certain provisions as to notification of accidents, and those as to first-aid and ambulance arrangements—these last being matters which belong less to the law of workmen's compensation than to the law of factories and workshops whereof the amendment and consolidation are long overdue. So far as we have been able to check it, the Bill appears to reproduce the existing law with fidelity and to add nothing that is new. Only one minute alteration is discoverable. The Workmen's Compensation (Silicosis) Act of 1918 empowered the Home Office to set up schemes for the payment of compensation by employers of workmen in specified industries involving exposure to silica dust, and added that the Rules Publication Act should not apply to such schemes. The exclusion of the Act as a whole appears to have been an oversight. What was presumably intended was merely that Section 1 of the Rules Publication Act (prior publication of proposed schemes) should not apply. Section 3 (printing and official publication of schemes) was not meant to be ruled out; at any rate, the Home Office has always complied with its provisions. This alteration in the Bill is trivial and technical; we cite it only to show that apparently the sole change in the Bill is the correction of a minute error. The Bill will not pass through Parliament at this crowded period of the session unless it is treated as a non-contentious measure. It will not be so treated unless the fact is known that it merely repeats the law and neither introduces nor immediately invites any substantial change.

SCIENCE AND RELIGION.

THE difficulties between science and religion are no longer of the sort which led self-confident mechanists and those who believed in the verbal truth of Genesis into a hopeless impasse, and no one is much concerned nowadays about the Flood, nor indeed about a good many other things which have from time to time been supposed to constitute the fundamenta of sound religion. To some it even seems that there is now no substantial disagreement in outlook. Organised religion has given up most of its dogmas which came to be at flat variance with ascertained fact, and there is little or no practical difficulty in any man being a sincere physicist and a sincere churchwarden. Easy minds can satisfy themselves with the reflection that religion and science deal with different and discrete compartments of human experience, and that there is no need to mix them up. But this simple pragmatism is shirking what is still a real difficulty. Religion and science both claim, and must needs claim, to be in the end a complete explanation of the world. No dualism will satisfy, and the discussion has developed now into the question whether a spiritual or a physical conception more nearly expresses reality; it progresses into the question whether the two conceptions are necessarily different and, most significant of all, those who take part in it are nearly always trying to find a basis of unification and common agreement rather than to emphasise points of dialectical divergence. At the moment, indeed, there seems to be less disagreement among those who try to cross the border in either direction than among those of either persuasion who keep to their own side of the line; neither science nor religion are harmonious wholes. Their relations to human experience are dealt with from a variety of aspects and with some differences of opinion in a volume[1] recently published. Earl Balfour says little more than that the truth is very uncertain, but the rest of the essays are all solid and provocative reading, and the general summary and discussion with which the Dean of St. Paul's concludes is most helpful. Dr. Charles Singer provides an interesting historical discussion, and the editor, Mr. Joseph Needham, contributes an amusing claim for the supremacy of biochemistry. We are inclined to regard Prof. Eddington's article on the Domain of Physical Science as the hub of the whole discussion: it cannot be followed in detail here, but the pith of it is the suggestion that the mind is more important than has been supposed in prescribing the nature and laws of the physical world, and that by its selection of values the mind may create its physical environment. It looks as if we shall soon progress to a more adequate conception of the inanimate, animate, and spiritual worlds as forming a coherent and consistent whole. Mr. E. Haigh, who has for many years been a teacher of physical science, has written a much slighter, more elementary book[2] on the same theme and indicating the same conclusions. A good deal of the book is made up of quotations from such a variety of writers as testifies to the width of the author's reading, but the method is irritatingly discontinuous to the reader, and Mr. Haigh would have done better to state his argument in his own words. His thesis is that there is no disharmony between religion and science, and that any attempt sharply to separate the physical and psychical fields of experience is unsatisfactory.

LANOLIN IN THE TREATMENT OF EXTENSIVE BURNS.

THAT "lanolin is the application which gives best results in the treatment of extensive and deep burns" is the opinion of Dr. Bellet,[3] médecin-en-chef in the French Navy. Serving in the great Saint-Mandrier Hospital at Toulon, he has had much experience of burns, especially in 1924, when he had under his care the 13 victims of a cartridge explosion in a casemate of *Patrie* in May and 10 men scalded when a steam-pipe burst on board *Courbet* in August. Other forms of treatment he considers unsatisfactory. Picric acid sometimes causes irritation and gives pain later, though it soothes at the first dressing. "Gomenolised" oil, the French equivalent for eucalyptised oil, drains away and leaves adherent dressings. Ambrine is good, but dressing takes a long time and healing does not occur so soon as with lanolin. Pure lanolin is a little irritating in summer, and about 20 per cent. of vaseline should then be added. Its use for the treatment of burns has long been recommended by French surgeons and was fathered by Inspector Girard, who advised Dr. Bellet in the cases reported. The results recorded were satisfactory. Of the ten men from *Courbet* who were scalded by super-heated steam, three succumbed (on the first, second, and tenth days), but the remainder were cured in six weeks, and discharged without contractions, awkward adhesions, scars or limitation of movements. The pain usually involved in dressings was noticeably absent and lesions on the head, face, and hands were sometimes cured within 20 days. Dr. Bellet gives the following account of his procedure: At the first dressing the burnt surfaces and a wide area around must be disinfected. The skin is always dirty, and compresses of spirit-soap will clean it. These are surprisingly well borne at first, and when they have done their work the burns are washed with much boiled water or weak permanganate solution. Blisters are opened, dead tissue is cut away—saving all the epidermis possible—and the wound is washed with normal saline and dried with sterile gauze. Finally, compresses soaked in sterilised lanolin with 20 per cent. of vaseline kept fluid in a water-bath, are adjusted over the burns, and over them is placed gauze and absorbent cotton. Large dressings should be prepared beforehand, to save time and shock to the patient. Gloves, instruments, and dressings must all be sterilised as if for a surgical operation, and this must, of course, be done also at subsequent dressing. At first the applications are changed daily, but there is no pain or bleeding, for they do not stick. After the dressing is removed, and any sloughs taken away, a washing with weak permanganate is followed by another with normal saline; the area around is cleaned with alcohol or ether; the whole is dried, and the dressing is re-applied. If all has been done well, the wounds are dry. The improvement under lanolin is said to be rapid; there is little discharge, and sloughs are quickly cast off. The wounds soon have rosy granulations and in a week bluish islands of epithelium begin to appear and a healing edge to form. And there is generally no surrounding inflammation nor pus.

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[1] Science, Reality, and Religion. Essays by the Earl of Balfour, B. Malinowski, C. Singer, A. Aliotta, A. S. Eddington, J. Needham, J. W. Oman, W. Brown, C. C. J. Webb, and W. R. Inge. Edited by Joseph Needham. London: Sheldon Press. 1925. Pp. 396. 12*s*. 6*d*.

[2] Religion and Natural Science. By E. Haigh, M.A., B.Sc. London: Student Christian Movement. 1925. Pp. 170. 3*s*.

[3] Arch. de Médecine Navale, 1925, iii., 199.

TUBERCULOSIS IN CHILDREN.

THE statistical work of Mr. Godias J. Drolet is well known in this country, and his recent review[1] of the mortality in childhood during the past quarter of a century in New York City deserves attention. Mr. Drolet states that in 1868 1191 infants died of tuberculosis per 100,000 children under 1 year of age in New York City. Thirty years later, in 1898, this mortality-rate was already down to one-half, or 609, and by 1923 it had been reduced to 94 per 100,000. Taking the deaths from tuberculosis among children up to the age of 15 years, it is shown that the mortality-rate of 136 per 100,000 in 1898 had been reduced to 33 per 100,000 in 1923—in other words, a reduction of 76 per cent. Tuberculous meningitis causes half of these deaths, and pulmonary tuberculosis comes next in the list. Another fact emphasised in the statistics is that abdominal tuberculosis in childhood has not been responsible for such a high mortality as in Great Britain. During the past two years there have been no deaths from tuberculous peritonitis in childhood in New York, which is striking in view of the fact that 98 per cent. of New York milk is pasteurised. Mr. Drolet attributes the more effective prevention of tuberculosis in childhood in America first to the spread of knowledge about contagion, and, secondly, to the improvement in preventive measures, such as increased hospital accommodation, systematic disinfection, and the pasteurisation of the milk-supply, all of which have diminished the risk of massive infection of children with *B. tuberculosis*.

In the same journal[2] Dr. B. S. Herben and Dr. M. A. Asserson make a statistical study of tuberculous meningitis from birth to the age of 15 years, touching first on the vexed question of the portal of entry in tuberculous meningitis. In the series of 115 cases dealt with the authors obtained definite history of contact in 56 per cent., a history of probable contact in 18 per cent. and suspicious history in 10 per cent., and no history in 16 per cent. They consider the theory of milk infection to be untenable in these cases because in New York City 98 per cent. of the milk-supply is pasteurised. The influence of tenement houses, of diseases such as measles and whooping-cough, and of sex and of age are all discussed as ætiological factors. The fact that about 9 per cent. of the cases were preceded by tonsillectomy unassociated with any other disease leads the authors to the conclusion that further research on this line is necessary. The greatest number of cases of tuberculous meningitis in any single age-period was found in children between 1 and 2 years of age, whilst, in terms of absolute numbers only, outside of the American stock there were more cases of tuberculous meningitis amongst the Italians than in any other racial groups comprised in the series. One of the most interesting sections of this study is that which deals with the investigation of housing conditions as an ætiological factor. This lays emphasis on a very valuable point. The part played by zymotic diseases as a predisposing cause is, of course, well recognised, but the connexion with operation for tonsillectomy is an isolated factor in the inquiry which certainly needs further investigation.

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[1] American Review of Tuberculosis, 1925, xi., No. 4.

[2] Ibid., 1925, xi., No. 3.

At the moment it would appear to be useless to speculate on this point without further data, and especially without controls. That the mortality-rate in tuberculosis in childhood has fallen with such marked rapidity during the last quarter of a century is a demonstration of the value of the antituberculosis campaign in New York.

PERMANENT CARE OF THE FEEBLE-MINDED.

IN the history of social progress in the twentieth century the Lancashire and Cheshire Society for the Permanent Care of the Feeble-minded[1] occupy an honourable position. They were pioneers in obtaining recognition for the fact that inborn mental defect is a permanent condition requiring life-long care, and their colony at Sandlebridge was the first of such establishments founded in England to meet a need even now inadequately supplied. On the occasion of the opening of a new recreation hall in the earlier part of this year reference was made to the remarkable beginnings of a work which is still incomplete. Twenty-eight years ago Miss Mary Dendy, now president of the society, set out to collect evidence which would induce the School Board for Manchester to adopt the then tentative experiment of special schools. First working single-handed, and later with the help of the late Dr. Henry Ashby, she discovered 500 defective children actually in the class-rooms. A further series were so grossly afflicted that school attendance had been excused. "Most of these cases were very severe, and many were pitifully neglected. One lad we found tied up in a cellar naked and howling."

By the time the survey was completed it was realised that special schools were not going to solve the problem. A permanent home was needed and protective legislation to keep the children safe and so to safeguard society from them. The statement of these aims seems obvious to the point of triteness to-day, but in 1897 the opposition aroused was fierce and almost universal. Even mental specialists considered that it was unjustifiable to put a stigma on any child by saying that he could not become normal, even if this was the obvious truth. From discouraging beginnings, however, indomitable pluck and hard work have built up the flourishing colony of to-day. Sandlebridge now shelters 212 inmates over 16 and 108 children. Over 200 adults have been there from an early age, some of them over 20 years. As all who have visited the colony know, they live under admirable conditions. A large farm and market gardens not only supply the older men and boys with a healthy and satisfying occupation, but provided produce for the institution to the value of over £2000 in 1924. Both males and females are trained in a variety of skilled trades which utilise the gifts of all, and make the colony almost self-contained as regards labour, if not financially self-supporting. The school has been extended during the year, but the pressure in places is very great, and speaks eloquently of the need for similar institutions elsewhere. It is disappointing that local authorities should still refuse to exercise their right of maintaining defectives after the age of 16, even though, as in two cases quoted in this report, the lads are of proved criminal tendencies. The instinct of the ordinary man, who revolts against the idea of permanent confinement and demands that the experts should prove their case in every instance, is none the less a sound one. The appeal of Sandlebridge and other colonies will be all the stronger when it is realised that they are required for selected cases only out of the feeble-minded population, and that special schools and home supervision will suffice for the majority. In view of the high reputation of this colony and the indispensable work it is doing, a fall in subscriptions of over £265 for the current year is regrettable. A suggestion that the debt of £3000 incurred for a much-needed recreation room and additional beds should be paid off in commemoration of Miss Dendy's long years of service is worthy of wide support.

ENCEPHALITIS FOLLOWING VACCINATION.

AT a recent meeting of the Académie de Médecine of Paris Dr. F. S. van Bouwdyk Bastiansee[1] and Dr. Terburgh, of The Hague, in collaboration with Dr. Byl, of Utrecht, and Dr. Levaditi, of Paris, made an important communication dealing with the occurrence in Holland of encephalitis following vaccination. During the course of 18 months there had been 34 cases of which 14 were fatal. The first case developed in March, 1924, and was followed by the second in April, the third in July, and five more in September. The next two occurred in February, 1925, the largest number in one month—viz., 16—being notified in March, followed by seven in April, and the last at the end of June. The clinical course was as follows. After a period ranging from 9 to 15 days after vaccination, the interval in the great majority being 10 or 11 days, an acute and violent cerebral condition developed. The first symptoms were vomiting and headache followed by increasing drowsiness. The following days convulsions appeared affecting one side or one extremity only. Babinski's sign was present in all cases in which it could be investigated. In only one case which ended fatally was there any paralysis—viz., hemiparesis accompanied by paresis of the frontal branch of the facial nerve. In the cases which recovered the acute stage lasted from 7 to 15 days. There were no sequelæ. The condition was obviously one of encephalitis, as meningitis could be excluded by the normal condition of the cerebro-spinal fluid, poliomyelitis by the absence of paralysis, and tetanus by the absence of trismus, convulsions, and the characteristic facies. The disease differed from epidemic encephalitis and the ordinary encephalitis of children in the following respects. The great uniformity of the symptoms as contrasted with the variable picture of epidemic encephalitis. The shortness of the acute stage, the absence of paralysis, particularly of the eye muscles, the presence of Babinski's sign, and the absence of sequelæ were distinctive. In two cases in which the brain was examined histologically the lesions were chiefly localised in the white substance, whereas in epidemic encephalitis they are mainly situated in the grey substance with a predilection for the mesencephalon. In some cases the vaccination pustules were very pronounced, but as a general rule the vaccinal reaction was normal. The lymph employed in the 34 cases did not come from the same calf but from ten different animals, and the lymph used for vaccinating these animals was derived from five different sources, two strains being of Dutch origin, one from Berne, one from Hamburg, and one from the Dutch Indies. In discussing the nature of the encephalitis the writers regard the possibility of a vaccinal encephalomyelitis as unlikely, as the vaccine did not show any exceptional neurotropic affinity, and numerous inoculations of rabbits with the patients' cerebro-spinal fluid remained negative. A more likely hypothesis appeared to be the activation of a dormant virus in children who were carriers of epidemic encephalitis. This view was supported by the following facts: (1) Most of the cases occurred at a season of the year when a recrudescence of epidemic encephalitis was to be expected. (2) Attempts to transmit the disease to animals failed, which is the rule in epidemic encephalitis. There was a further possibility of the affection in question being caused by some unknown virus which was capable of producing a particular form of encephalitis under special conditions.

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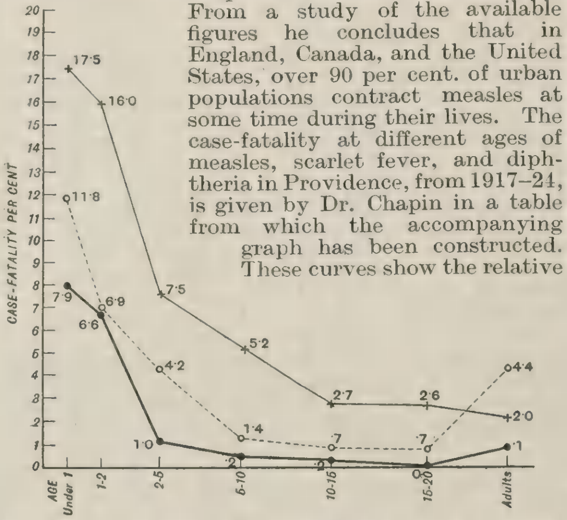
[1] See Twenty-sixth Annual Report for 1925 of the Society, 72, Bridge-street, Manchester.

[1] Bulletin de l'Académie de Médecine, 1925, xciv., 815.

SOME EPIDEMIOLOGICAL STUDIES.

RECENT issues of the *American Journal of Hygiene* contain valuable contributions to epidemiology. In the September number Dr. C. V. Chapin, the distinguished veteran health officer of Providence, R.I., reviews the incidence of measles in that city, 1858–1923. Recently there has been a periodicity of a little over two years, but longer intervals were experienced in the earlier period. Dr. Chapin's comparison between sickness and mortality curves since 1907 clearly shows the inutility of mortality statistics for purposes of public health administration. From a study of the available figures he concludes that in England, Canada, and the United States, over 90 per cent. of urban populations contract measles at some time during their lives. The case-fatality at different ages of measles, scarlet fever, and diphtheria in Providence, from 1917–24, is given by Dr. Chapin in a table from which the accompanying graph has been constructed. These curves show the relative importance as causes of death at different ages of measles, scarlet fever, and diphtheria, and, when checked by a separate statement of the actual number attacked by each disease, indicate the scope of preventive medicine in respect of each disease.



Experience in Providence, R.I., of case-fatality of three chief children's infections.

Diphtheria: upper (continuous) line. Scarlet fever: middle (dotted) line. Measles: lower (continuous) line.

In the same number of the journal is an account of an outbreak of 116 cases of scarlet fever due to ice-cream, traced to a person engaged in the process of manufacture, who was suffering from scarlet fever at the time. A filtrate prepared from a culture of hæmolytic streptococci, isolated from this ice-cream maker, gave typical reactions on persons known to be Dick-positive.

The November issue contains a study of multiple cases of infantile paralysis in 253 families. A large proportion of the so-called secondary cases were found to arise from a source common to them and to the respective primary cases, while a much smaller proportion of secondary paralysed cases in the same family, which occurred within 10 to 18 days after the primary cases, can be regarded as probable true secondary cases. It is inferred that the period of incubation of the disease varies between 10 and 18 days, and that the search for the source of infection should centre round about the fourteenth day before the onset of acute symptoms. It would appear also that the period of greatest infectiousness is within the first three or four days of the acute stage of the disease. The investigators, Dr. W. L. Aycode and Dr. Paul Eaton, make a comparison of multiple cases in households of measles, scarlet fever, and infantile paralysis.

MYOMECTOMY FOR FIBROIDS.

IN an article recently published in our columns[1] Mr. Victor Bonney described myomectomy as the treatment of election for fibroids. By his definition this means that he considers conservation of the uterus the ideal to be aimed at whenever the organ, apart from the tumours, is reasonably healthy. Such an ideal is probably present in the mind of most gynæcologists confronted with a case of fibroids in the child-bearing period; but technical difficulties, uncertainty about the risk of death, and a doubt whether a functionally useful organ may be preserved without risk of recurrence of the growths often sway the mind in favour of hysterectomy. Myomectomy is very frequently done, of course, where there are only one or two fibroids discovered, and these are submucous; but its exponents are not satisfied with this limited use. In the hands of Mr. Bonney good results are undoubtedly obtained, and his contributions to the literature of the subject and the excellent technique and instruments he has evolved will do much to make the operation popular. In a paper read at a meeting of the North of England Obstetrical and Gynæcological Society on Oct. 16th, Dr. Leith Murray, of Liverpool, also gave an encouraging account of 60 cases treated by myomectomy, and deplored the fact that so large a number of women suffer removal of their uterus when it might be saved. It may be objected, however, that the very expert operator who has developed a special technique may get exceptional results, and that the procedure is not one for everyday use. The question of mortality-rate is somewhat vexed at present. In Mr. Bonney's series of 220 cases the rate was nearly 2·1 per cent., which, he considers, compares favourably with that for hysterectomy. Dr. Arthur Giles, however, disputes this view, and states that although he has done 203 myomectomy operations (mainly in women under 40) with but three deaths, his death-rate for the last 1000 hysterectomies has been only 0·6 per cent. Taking also into consideration the possibility of recurrence, he thinks that hysterectomy is certainly the better operation after the child-bearing age is over. At the discussion following the reading of Mr. Bonney's paper at the Royal Society of Medicine, London, at which Dr. Giles made these comments, Lady Barrett said that she had commonly found microscopic myomata in uteri which contained multiple seedling tumours, especially in women of from 30–36 years of age, and that an attempt to remove the seedling tumours would leave the microscopic ones to grow later. But Mr. Bonney considers the fear of recurrence an unsubstantial bogy. The seedling tumour is, he thinks, probably formed much earlier in life than has hitherto been believed—probably in the 'twenties—and the formative agent, whatever that may be, ceases to act after a period. There is at any rate this to be said, that seedling fibroids may not interfere with the physiological functions of the uterus, and myomectomy, which is not effectual in removing all the growths, may tide the patient over till she has passed the child-bearing age, after which the radical operation may be performed. Dr. Murray is convinced that a uterus much mutilated at the operation may undergo involution and heal with a negligible risk of weakness in any future pregnancy, whilst the sentimental value of the conserved uterus and its effect on the later history of the patient is certainly very considerable. All the authorities are agreed that extensive myomectomy may be followed by pregnancy, and that the operation can be done without producing abortion in pregnancy. Dr. Giles has done myomectomy in 18 pregnant women, all but one of whom went to term. But the comment of Mr. Gordon Luker that rest and sedatives are nearly always effective in relieving the symptoms of fibroids in pregnancy may well be borne in mind. Many women do not want children, and until it is proved that no extra risk is incurred by the extended operation the point of view of the patient is obviously very important.

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[1] THE LANCET, Nov. 21st, 1925, p. 1060.

UNIFICATION OF POWERFUL MEDICAMENTS.

THE Second International Conference on the Unification of the Formulæ of Powerful Medicaments was held at Brussels from Sept. 21st to 29th last, when Sir Nestor Tirard represented the General Medical Council, Mr. Edmund White the Pharmaceutical Society of Great Britain, and Dr. G. F. McCleary the Ministry of Health. Prior to the Conference the British delegates held several meetings to discuss the programme submitted, and to draft a document representing their views. The Conference was attended by some 50 delegates sent from 27 powers, several of whom had forwarded reports upon the programme. These were circulated and were reported upon by special committees, and were then discussed at full meetings of the Conference. Of the ten questions in the programme to be considered, one relating to international regulations for the sale of narcotic drugs was withdrawn, as this subject had already been dealt with at a conference of the League of Nations. The other questions were discussed, with results which were embodied in a series of resolutions, of which the more important were these. The Conference advised the recognition of biological methods of standardisation which have been or may be recommended by the Health Section of the League of Nations. It approved of the formation of an International Secretariat for the unification of pharmacopœias, while recognising that the conditions of its establishment must be determined by the League of Nations. Similar reservations applied to the proposed formation of two other international committees for the investigation of assay processes and of methods for making galenical preparations. The British delegates, while in general agreement with the recommendations of the Conference, have notified certain reservations in their report to the Government. These reservations deal with methods of estimation of fluid preparations, with some of the proposed standards, and with some of the proposed alterations in nomenclature. The proposals remain inoperative until officially accepted by the several Governments. It may be said, however, that the nomenclature proposed by the Conference for international adoption does not differ materially from that of the First International Conference and follows closely that of the British Pharmacopœia.

PUBLIC HEALTH ADMINISTRATION.

THE whole question of the Poor-law was considered by a Royal Commission appointed in 1905, which reported in 1909. Majority and minority reports were made, differing on important points, and in 1917 a committee known as the Maclean Committee was appointed "to consider and report upon the steps to be taken to secure the better coördination of public assistance in England and Wales and upon such other matters affecting the system of local government as may from time to time be referred to it." This committee succeeded to a great extent in reconciling the majority and minority reports of the Royal Commission. It recommended the abolition of the boards of guardians and the transfer of their functions to local authorities—normally county and county borough councils—on certain stated lines. The Maclean Report was accepted by the Government in 1919, and last May the House of Commons accepted without a division a resolution to the effect that legislation on the lines of the Maclean Report should be passed, including "a complete absorption of the existing Poor-law authorities and their functions in the county, borough, and district councils." On that occasion the Minister of Health made it clear that, while he accepted the principle of the resolution, he must not be understood as accepting the whole of the proposals of the Maclean Report. He added that it was the intention of the Government to consider the whole question anew, and, following the precedent set in rating and valuation, to discuss it fully with all the local authorities concerned.

Certain provisional proposals have now been circulated from the Ministry of Health to associations of local authorities, the L.C.C., and others concerned as the first step in this process of discussion. Generally they have been drawn up on the lines proposed by the Maclean Committee, but greater freedom is given to local authorities in arranging for the performance of the transferred functions, while new provisions are included with respect to the financial relations between the Ministry of Health and local authorities. These provisional proposals should enable local authorities to offer constructive suggestions of a definite and concrete kind, while it should be clearly understood that the Minister holds himself at liberty to modify or vary them in any particular in the light of the comments or suggestions to which they may give rise.

EXANTHEMA MILIARIFORME.

UNDER this title Prof. M. Manicatide,[1] director of the Pædiatric Clinic at Bucharest, and his assistant, Dr. A. Schiler, report five cases in children, aged from 6 weeks to 4 years, of a new acute exanthem, which was first seen in a creche at Bucharest in 1913, and ten years later in another creche in the same city, when it formed the subject of a communication by Dr. M. Danila and Dr. Stroe to the Société de Biologie of Paris. The incubation period is probably five to eight days, and usually escapes notice altogether, as the only symptom at this time is a slight cough. The invasion, which lasts one to three days, sets in abruptly with fever, profuse sweating, and catarrh of the buccal, pharyngeal, nasal, bronchial, and occasionally conjunctival mucous membranes, though the intensity of the catarrh is never very great. The eruption lasts three to four days and consists of two stages. The first or scarlatiniform stage is characterised by a general or local erythema, and the second by a vesicular or miliariform eruption. The disappearance of the vesicles is immediately followed by desquamation, which is fine and branny in character, sometimes being hardly apparent. When there is only a single crop of rash, the disease is of short duration, but it may assume a prolonged course when the eruption appears in several crops which are either separated from one another by a short interval, or subintrant with coexistence of a scarlatiniform eruption, miliaria, and desquamation. Examination of the blood during the scarlatiniform stage almost invariably shows a predominance of the mononuclear leucocytes. During the vesicular stage the blood returns to its normal condition. General enlargement of the lymphatic glands and increase in size of the spleen are the rule. Exanthema miliariforme must be distinguished from the eruption described by American writers under the name of exanthema subitum, which it resembles by its short invasion and catarrh of the mucous membranes, but the critical fall of temperature coinciding with the appearance of a morbilliform eruption is distinctive of exanthema subitum. The disease which exanthema miliariforme most closely resembles is sweating sickness. The latter, however, is a grave contagious disorder which affects adults, whereas exanthema miliariforme is a mild disease which attacks children only, especially infants, and never their mother or nurse. The prognosis is invariably favourable and the treatment symptomatic.

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[1] Bulletins et Mémoires de la Société Médicale des Hôpitaux de Bucarest, 1925, vii., 146.

Modern Technique in Treatment.

A Series of Special Articles, contributed by invitation, on the Treatment of Medical and Surgical Conditions.

CLI.—THE TREATMENT OF SPASMOPHILIA.

SPASMOPHILIA is a term which includes infantile tetany, both in its obvious spasmodic forms of carpopedal spasms, convulsions, or laryngismus, and also in its latent forms. In the latter recognition rests on the appearance of Chvostek's facial sign, Trousseau's sign (muscular spasm on pressure over large arteries or nerves), or Erb's sign of increased excitability to the galvanic current. The condition being a symptom-complex rather than a disease the treatment must be directed towards a correction of the underlying error of metabolism or nutrition, as well as towards an alleviation of the more urgent spasmodic symptoms.

The many advances during the past seven years in our knowledge of the factors concerned in the production of spasmophilia are due directly to researches into the chemistry of the blood, made possible by recent developments of micro-chemical methods of analysis. Prior to these but little advance had been made for a hundred years. The treatment advocated in the text-books of 1920 (and even later) differs very little from the sedative, purgative, and hot-bath treatment of the text-books of 1820. It had long been known that there was a close association between infantile tetany and rickets; that tetany was peculiarly prevalent during the winter and spring months; that digestive disorders were a strong predisposing factor. But now we can add to these clinical observations certain facts gathered from experimental and chemical investigations which point us more directly towards the exact nature and causation of the condition. A preliminary re-statement of some of these will make clearer the principles of treatment to be detailed later.

Biochemical Considerations.

1. Measures which lead to an alkalosis increase the spasmophilic symptoms, while the administration of acids has a contrary effect. An example of this is the not uncommon occurrence of a case of mild latent tetany being thrown into active carpopedal spasms by the administration of large doses of alkalies, either by the mouth or in the process of blood transfusion.

2. The rôle of an alkalosis in the production of tetany is confirmed by a study of the examples of tetany in adults which may follow forced expiration and excessive vomiting. In each case the body is being depleted of acid radicles, CO_2 being washed out of the blood in "hyperpnœa tetany" and HCl being lost in the vomited stomach contents in "gastric tetany."

3. The most constant chemical fault in infantile tetany is a diminution of the calcium content of the blood. The normal level is about 10 mg. per 100 c.cm. of blood. If for any reason it falls to a level of about 6 mg. per 100 c.cm. spasmophilic symptoms will result.

4. The calcium content of the blood may be reduced under any of the following conditions: (*a*) Deficiency of calcium in the diet—e.g., use of a too dilute sweetened condensed milk. (*b*) Deficient absorption of calcium from the bowel—e.g., in intestinal indigestion where there is an excessive loss of calcium in the stools. (*c*) Lack of exposure to sunlight—e.g., a seasonal fall of calcium in the winter months has been demonstrated. (*d*) Diseases of the parathyroids.

5. Where a sufficient calcium is available for absorption a restoration of a lowered blood calcium can be brought about or helped by: (*a*) Administration of acids, especially in the form of hydrochloric acid or ammonium chloride. (*b*) Exposure to direct sunlight, or artificial ultra-violet rays. (*c*) Administration of cod-liver oil, when a diet deficient in vitamin-containing fats has been a factor. Treatment based on these points is being found by clinicians to yield satisfactory results. Readers wishing to go more deeply into the subject should consult the writings in recent years of Howland and Marriott, J. B. S. Haldane, Casparis and Kramer, Scheer and Salomon, Adlersberg and Porges, Paton and Findlay, Burns, Gyorgy, and others.

Management of a Case.

Management includes (*a*) general measures devoted to a correction of errors likely to affect calcium utilisation or produce alkalosis; (*b*) emergency measures directed towards a relief of the urgent spasmodic symptoms such as laryngospasm, convulsions, &c. In a mild or latent case general measures will suffice, and should be continued until all evidence of spasmophilia disappears. In a severe case with spasmodic symptoms the general treatment must be promptly instituted and eagerly pursued, and reinforced by some method of local and symptomatic treatment.

General Measures.—In the child's diet and digestion lies the fault in the majority of cases of idiopathic infantile tetany occurring in the winter months, the lack of sunlight acting as an "accessory after the fact." An ample supply of calcium must be provided and any errors of digestion corrected to ensure efficient absorption. After a few hours' starvation, while a purge is being given, a suitable diet of cows' milk should be prescribed or, when possible, breast milk should be given. Additions should be made to the diet of foods relatively rich in calcium—for example, cabbage, turnip, and oatmeal—given in the form of vegetable purée, with the addition of oatmeal gruel. If there is any doubt about the supply of calcium in the diet calcium chloride in doses of 10 to 15 gr. two or three times a day should be added. Intestinal indigestion should be treated on the traditional lines of cutting down the intake of fat and excess of carbohydrates and giving an increased amount of protein. Skimmed cows' milk or protein milk serves as a suitable basis of such a diet. Potatoes, bread, and rice, containing relatively little calcium, should be replaced by vegetable purée, oatmeal, junket, and meat. An initial dose of castor oil should be followed by a daily powder containing calomel, rhubarb, and ginger suitable for the age of the child. Cod-liver oil plays a part in the absorption or utilisation of calcium and should be given in all cases. A teaspoonful of a 50 per cent. emulsion twice a day suffices.

The chief hygienic measure is to have the child nursed as much as possible in the open air and sunlight. The modern fashion of withdrawing children from out-of-doors sunlight to indoor artificial light treatment is to be deplored; but at certain seasons, and in large industrial towns, a daily exposure to mercury-vapour lamp will serve as a useful supplementary method.

Most important, however, of the measures of general treatment is the systematic administration of acids, best given as hydrochloric acid or ammonium chloride. A child of 12 months should have up to half a drachm of acid hydrochlor. dil. (B.P.) diluted in 10 oz. of water in the 24 hours. The acid solution can be suitably given as a diluent to the milk, care being taken not to exceed the proportion of acid to milk which will produce clotting—roughly 1 pint of acid solution to 2 pints of milk. Ammonium chloride is just as efficacious. After absorption the ammonium is converted to urea and HCl liberated. A suitable dose is a drachm, dissolved in 10 oz. of water, to be taken during each 24 hours, or added to the milk.

Symptomatic Treatment.

The chief urgent symptoms of spasmophilia are convulsions, laryngospasm, and carpopedal spasm; success in their relief will be but temporary unless general treatment has been instituted. When called to see a child who has had a convulsion, the first step is to decide that it was spasmophilic in origin. Chvostek's sign (a sudden spasm on tapping one side of the face) will usually decide the diagnosis, but meningitis, polio-encephalitis, pyelitis, pneumonia, and other diseases should be excluded. A hot bath with cold compresses to the head is a valuable therapeutic measure which will almost certainly have been resorted to by the nurse or mother. In the presence of an actual spasmophilic convulsion, preparations should be made for a rectal wash-out and the rectal administration of chloral hydrate while the hot bath is being given. Chloral hydrate is remarkably effective and safe in these cases. For a child of 12 months a dose of 10 to 15 gr. dissolved in water should be left in the rectum after a preliminary washing out. If the child is able to swallow, 3 gr. chloral hydrate should be given by the mouth instead. In refractory cases an inhalation of chloroform should be used. A practitioner called to such a case should take a rubber catheter, a solution of chloral hydrate, and chloroform.

Laryngospasm, or *laryngismus stridulus*, is an urgent spasmophilic symptom; though improbable, it is yet possible that the condition *may* be fatal, the spasmodic closure of the glottis going on to produce cyanosis, convulsions, and death. The child should not be moved until the urgent symptoms have been controlled, since exposure to chill and fright, such as might occur in a cab on the way to a hospital, exercise a deleterious effect. Hot sponges should be applied to the larynx, while chloral hydrate and rectal wash-outs are used. While awaiting the effect of treatment it is wise to confirm the diagnosis, excluding laryngeal diphtheria or impacted foreign body.

The symptoms of *carpopedal spasm* are not necessarily urgent, but usually require active special treatment, leading after a few hours to much pain and discomfort. The child is usually miserable and crying. Successions of hot baths with chloral hydrate or antipyrin should be tried, until the general measures of treatment have produced their effect.

Chronic and Refractory Cases. Parathyroid Treatment.

Almost every case of spasmophilia—i.e., of idiopathic infantile tetany, or "spring" tetany—yields readily to treatment on these lines. In the rare case of persistent or recurrent tetany which resists treatment there is commonly some chronic bowel condition, such as cœliac disease or idiopathic dilatation of the colon, which demands treatment. If, however, there is no chronic intestinal disease to account for it, a disease of the parathyroids may be suspected. I am in no position, however, to say how this can be proved, for in those cases of persistent and recurrent tetany in a child in which I have been forced to this diagnosis, various samples of parathyroid gland had no effect. The whole question of parathyroid therapy in tetany is centred in the problem of the preparation of an active extract. No doubt there will be great scope for its use when this problem is solved, and the recent experiments of Collip and Clarke[1] appear to mark a definite advance. Nevertheless, it is improbable that spasmophilia in infants is due to a parathyroid lesion. If it were so we would not expect it to be so readily curable as it is without the aid of parathyroid treatment.

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[1] Collip, J. B., and Clarke, E. P.: Journal of Biological Chemistry, 1925, lxiv., 485.

Special Articles.

AN INSTITUTE OF COMPARATIVE PATHOLOGY IN SOUTH AFRICA.

The scientific quality of communications emanating from the laboratories of Veterinary Education and Research of the Union of South Africa, and of the reports issued from time to time by its director, is well known. The investigations carried out into the causal agencies of diseases affecting animals in the subcontinent, and the large measure of success achieved in eradication and control are of recognised importance to veterinarians and stock farmers throughout the world. With the generous support of successive governments before and since the Union, the Department of Agriculture has been enabled to expand its laboratories from an emergency shed, whence the rinderpest epizoötic of 1896 was studied, into a main institute at Onderstepoort, near Pretoria, with daughter institutes at Grahamstown and Pietermaritzburg, Vryburg, Bestersput, and Ermelo. An account of the detailed organisation of this unrivalled institute of comparative pathology, developed by Sir Arnold Theiler, K.C.M.G., would seem timely, in view of the efforts made within the last few years to foster the systematic study of this branch of science.

The Routine Department.

The buildings of the main institute alone cover some five acres, and the annual budget of the laboratories is over £90,000. Of this sum nearly half is recovered every year by the activities of the Routine Department, under the general direction of Dr. P. R. Viljoen, laboratory products being manufactured on a large scale for sale to farmers at practically cost price. The sale last year of 15,000,000 doses indicates sufficiently the farmers' confidence in the efficacy of the prophylactic and curative medicaments supplied. This confidence is fostered by addresses given by workers in the institutes, who are ready to discuss with farmers any difficulties or complications that may follow the use of laboratory products.

The total accommodation available at Onderstepoort for the various activities connected with the preparation of laboratory products consists of seven laboratories, seven kitchens, four store rooms, two incubating rooms, four packing rooms, and one cold storage room. The number of horses, mules, cattle, sheep, and goats kept in the stables and kraals on the laboratory site for various purposes averages 1500 at a time. These animals are mostly first utilised for the routine production and testing of vaccines and sera, and they then become available for experimental and research work. At the branch laboratories the numbers of animals on hand average 40 at Maritzburg, 550 at Vryburg, 1500 at Bestersput, 600 at Ermelo. Strict control of the movement of all animals is carried out so that intercurrent infectious diseases are immediately detected and steps promptly taken to check their spread. A staff of four officers devote their whole time to the recording of experimental data, commencing with the arrival of an animal at the station, its registered number, every experiment in which the animal is subjected for treatment, every result and clinical symptom, and, where necessary, full post-mortem report being entered on its own chart; thus it is possible, at a moment's notice, to obtain full particulars of every experiment that has been undertaken into any diseased condition. The records include notification of movements of animals from one stable to another, and cross reference given to any farmers' correspondence that may have led up to the initiation of an experiment.

Methods of Conferring Immunity.

Any attempt on a large scale to confer on animals immunity to specific diseases demands considerable ingenuity, even when ætiology is established. The methods used vary from the comparatively simple preparation and distribution of vaccine where the causal organism of a disease is known, to the devising of means whereby immunity may be conferred against a disease, such as horse-sickness, thought to be due to a filterable virus transmitted by an insect.

Vaccines against Diseases of Known Causation.—Where an organism has been isolated the vaccines supplied are for the most part made up of live strains of attenuated virulence. For example, the live spore vaccine prepared from attenuated cultures of *anthrax* on the Pasteur principle, by a method recently worked out in the research department of the institute, gives almost absolute protection for a period of 12 months; indeed, so successful has this product proved that the Union Government last year decided on its free issue to farmers, in spite of the great loss of revenue entailed. The vaccine against quarter evil (caused by a sporulating bacterium) consists in the artificial aggressin produced by cultures; the immunity conferred is not absolute, but protection is afforded for 9 to 12 months. It should be noted, incidentally, that every batch of vaccine prepared at this institute is tested as to potency and value as an immunising agent before being passed for sale. This system of immunity control is one of the features of the organisation. Red water (*Piroplasma bigeminum*) in cattle is due to a protozoon in the blood, which remains there in some latent form after the animal has recovered. The strength of this residual virus fortunately varies in different cases, and the milder strains have been found suitable for use as vaccines without attenuation. On a similar principle is based the vaccine against anaplasmosis (gall-sickness), a disease caused by *Anaplasma marginale.* A strain was found (later called *Anaplasma centrale*) which produces a milder though still typical form of the disease, and immunity derived from *A. centrale* protects against the more severe diseases due to *A. marginale.* The two types of parasite are easily differentiated under the microscope.

Filterable and Ultra-microscopic Viruses.—In diseases of unknown ætiology, the virulence of infective material derived from a sick animal can sometimes be modified by passage through other animals of the same species. This principle is adopted in the preparation of blue tongue vaccine.

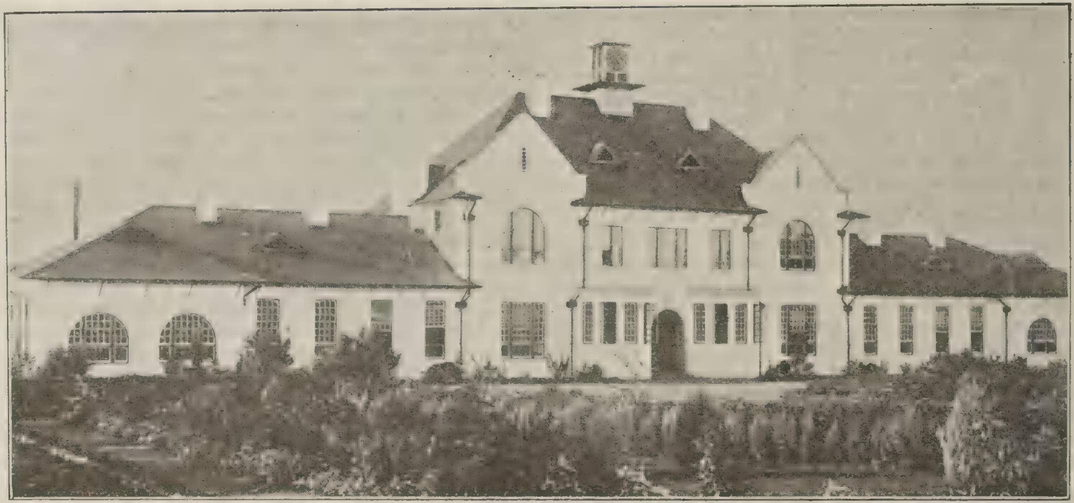
Horse-sickness.—Much more complicated is the system whereby horses, and to a lesser extent mules, are protected against the prevalent disease of horse-sickness. The horse that has recovered naturally from an attack of horse-sickness is called "salted" in South Africa; such animals are rare and are valued highly, since they show a considerable amount of immunity. The immunity is not, however, absolute, breakdowns occurring in seasons when the epidemic takes a severe form; but sufficient immunity can be conveyed to protect most animals against this disease.

Mules and horses differ in susceptibility to this disease and require different methods of conveying immunity. In mules a simultaneous inoculation of serum and virus brings about a fever reaction, and sometimes typical symptoms of horse-sickness. About 3000 mules are inoculated every year, 95 per cent. being subsequently immune; the mortality is 2–3 per cent. In horses two inoculations have to be made with a few days' interval between them, utilising similar serum on both occasions but different strains of virus. Several thousand horses have been inoculated, about 85 per cent. being protected. The scarcity of technical operators has prevented inoculation on a very large scale, but this difficulty is being overcome. Inoculated horses obtain an immunity at least equal to that obtained by "salted" horses, and are in great demand by farmers. In the preparation of serum precautions have to be taken against hæmolysis and against the transmission of infectious anæmia. This is a disease due to an ultra-visible virus easily communicated to horses either by blood or by serum, but experience has shown that if serum is kept for 12 months before use the infective agent is destroyed.

The preventive side of work carried out in the routine department is not confined to the production of vaccines and sera, but is concerned also with the giving of personal expert advice when required, and with distribution of pamphlets offering suggestions as to how by dipping, protection from insects, and by hygiene on farms infection may be further avoided. Knowledge gained from researches in this and other institutes is made available to farmers as soon as possible, and the rationale and limitations of any treatment advised carefully explained to them.

Curative Treatment.—On the curative side less success has been achieved, excepting in regard to the wireworm infection of sheep, for which over 11,000,000 doses of powder (sodium arsenite and copper sulphate) were sold last year. The use of a parasiticide for ticks has been attended with considerable success against the *Trichostrongylus* and *Œsophagostomum columbianum.*

Fig. 1.

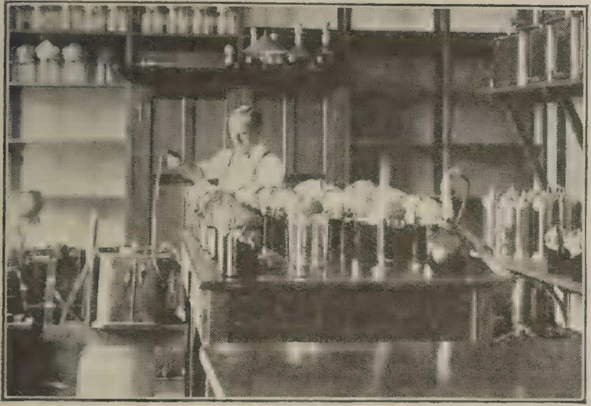


Front view of the main building at Onderstepoort, near Pretoria.

Sufficient dip-testing requisites for about 60,000 tests per year are issued for use with a cheap dip-testing instrument, which enables the farmer to control the strength of dips used for the eradication of ticks.

Diagnosis.—A special staff is available to investigate outbreaks of obscure diseases occurring on farms, however remote. In any case of sudden collapse farmers are urged to send to the laboratories blood smears taken immediately after death, slides being supplied free. To ensure speedy communication a post and telegraph office has been installed actually in the building of the institute; between 50,000 and 60,000 letters, wires, and parcels are received every year and the same amount despatched from the central institute alone. The number of specimens examined approximate to 25,000 every year, and this applies only to microscopical, pathological, and serological specimens, leaving out of account chemical analyses. In addition about 1000 samples each year are received for chemical analysis, partly from farmers in relation to cases such as stock poisoning, partly from other sections of the division requiring chemical assistance, and partly in connexion with the Government Regulations controlling the sale of stock dips and stock remedies. Technical advisory work under these regulations is also carried out. Incidentally in South Africa a curious legal anomaly obtains. There are no antivivisection laws. Any unqualified person may practise veterinary surgery, and anæsthetics are not compulsory for any animal operations. On the other hand, no manufacturer is allowed to sell as a dip or as an internal remedy for any animal disease a mixture which is not accepted by the Government as corresponding to the claims made for it. Patent veterinary remedies are subject to rigid investigation in this institute. No such regulation is applied to patent medicines designed for human consumption.

FIG. 2.



Decanting horse serum.

Farmers are encouraged to forward for tests on experimental animals plants which they suspect of being poisonous. Those which are incriminated are subjected to detailed study in the botanical section of the biochemical department, where a museum of poisonous botanical specimens is arranged for inspection.

Research Activities.

Special blocks are allocated to the study of infectious diseases, pathology, biochemistry, bacteriology, entomology, and helminthology, under the direction respectively of Dr. P. J. du Toit, D.Ph., Zurich, Dr. Med. Vet., Berlin (deputy director of Veterinary Education and Research); Prof. Wall de Rock, Dr. Med. Vet., Berne; Prof. H. H. Greene, D.Sc. Glasgow; Dr. E. M. Robinson, Dr. Med. Vet., Berne; Mr. G. A. Bedford, F.E.S.; Dr. Frank Veglier, Dr. Med. Vet. Turin. Results are published from time to time in the scientific reports of the director,[1] in the *Journal of Agriculture* of the Union of South Africa, and in the appropriate special journals of Europe and America. The following notes do no more than call attention to a few of the problems now being attacked. On the pharmacological side of the biochemical department systematic research is only now commencing, but will mainly concern the investigation of plants directly poisonous to live stock, or responsible for stock disease (e.g., *Cotyledon wallichii*, *Geigeria passerinoides*). On the botanical side studies of the relationship between distribution of plants and occurrence of disease are undertaken. Problems in plant physiology related to nutritive value of natural veld have also formed the subject of laborious investigations by Dr. Marguerite Henrici, Ph.D. Basle, who has recently been appointed research officer in plant physiology. This work includes studies of the chlorophyll content of plants growing under arid conditions, the osmotic behaviour of wilting grasses, plant transpiration during drought, the carbohydrate metabolism of grasses under extreme meteorological conditions, the occurrence of hydrocyanic acid in edible grasses as a phenomenon of wilting, the mineral metabolism of grasses growing in phosphorus-deficient soils. On the more general biochemical side research work has ranged over chemical investigation of poisonous plants; the utility of various compounds for the eradication of external and internal parasites; the fate of ingested arsenicals in the animal body; the chemical changes brought about by bacteria in dipping tanks and the isolation on the non-pathogenic organisms concerned —e.g., *B. arsenoxydans* and *B. arsenreducens*; changes in eggs during cold storage; chemical aspects of deficiency diseases in stock; and a variety of other lines indicated by publications in the reports of the division. The most important work from an economic point of view at present in progress concerns the mineral metabolism of stock, particularly in relation to the "aphosphoriosis in cattle," so widespread over the Union of South Africa. Studies of soil and vegetation are combined with direct nutrition experiments upon the animal itself, both at laboratory headquarters and in the areas over which mineral deficiencies are reflected adversely by the animals, either in the form of specific disease (e.g., styfsiekte), or osteophagia, or generalised malnutrition (stunted growth). In some cases correction of the mineral deficiencies of natural veld has resulted in trebling the growth-rate of calves reared upon it. Results from laboratory experiments on mineral metabolism incidentally yield information upon vitamin factors in stock nutrition; the most interesting fact being that cattle are apparently not susceptible to avitaminoses, but can grow well on rations notably deficient in A, B, and C.

In the helminthological department two officers with their assistants devote all their time to the study of worm diseases. The life-histories of the commoner worms of sheep have been worked out accurately, and methods of combating the diseases are attempted on the basis of the knowledge so obtained. In the bacteriological department, where cultures of bacteria and of trypanosomes are maintained, particular attention is devoted to the study of anaerobes. In the entomological department a good collection of ticks, mosquitoes, flies, and other insects of economic importance is available and their life-histories are being studied.

The Investigation of Specific Diseases.

Nagana.—During the year 1922–23 an agreement was made with the Bayer Company in Germany to test their new remedy, "Bayer 205" on cases of nagana (sleeping sickness of cattle) in Zululand. The company undertook to supply sufficient quantities of the substance and to send their own veterinary surgeon to supervise the experiments. The institute, on the other hand, agreed to supply all the experimental animals and to place the entire staff and equipment of the Nagana Research Laboratory near Empangeni in Zululand at the disposal of this work. The experiments were designed to determine both the prophylactic and the curative action of the drug on infections with *Trypanosoma congolense*, *Trypanosoma brucei*, and *Trypanosoma vivax*. The results obtained do not appear to have been altogether satisfactory,[2] especially in regard to the curative effect of "Bayer 205." However, from the prophylactic point of view fairly encouraging results were obtained. It was further found that by combining treatment by "Bayer 205" with tartar emetic animals could be protected against the bite of infected flies, even though exposed to a very severe infection. It is found troublesome in practice to carry out a series of injections into the jugular vein of cattle, and it is hoped to find a method of treatment which can be given subcutaneously.

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[1] Ninth and tenth reports of the Director of Veterinary Education and Research, Government Printing and Stationery Office, Pretoria, 1924, pp. 823, 10s.

Lamziekte.—Sir Arnold Theiler's own researches into diseases caused by piroplasms (*Theileria parva*, *Gonderia mutans*, *Anaplasma marginale*, &c.) and into the diseases of ultra-visible origin (horse-sickness, blue tongue, and heartwater) are classical. More recently the complete elucidation under his direction of the causation, prevention, and cure of the mysterious disease of cattle known as *Lamziekte*, as a typical instance of the fine work accomplished in this institute, may be considered in some detail. The chain of causation as unravelled by the director and his colleagues is shown clearly in the Fig. 3, which is largely self-explanatory. Low phosphorus content is a feature of South African soil; over wide areas of the Union the level of phosphorus reached in the natural vegetation is below the physiological optimum of cattle. Cattle attempt to supplement the deficiency by eating dead animal carcasses, often infected by specific saprophytic bacteria which produce a toxin causing the disease known as lamziekte. The deficiency not only leads indirectly to disease, through the pica induced in animals reared on such soil, but also limits their growth, damages their general condition, and diminishes their milk yield. Further experiments are in progress on the mineral metabolism of stock, and it is expected that considerable light will be thrown on other obscure nutritional disorders encountered in practice.

FIG. 3.

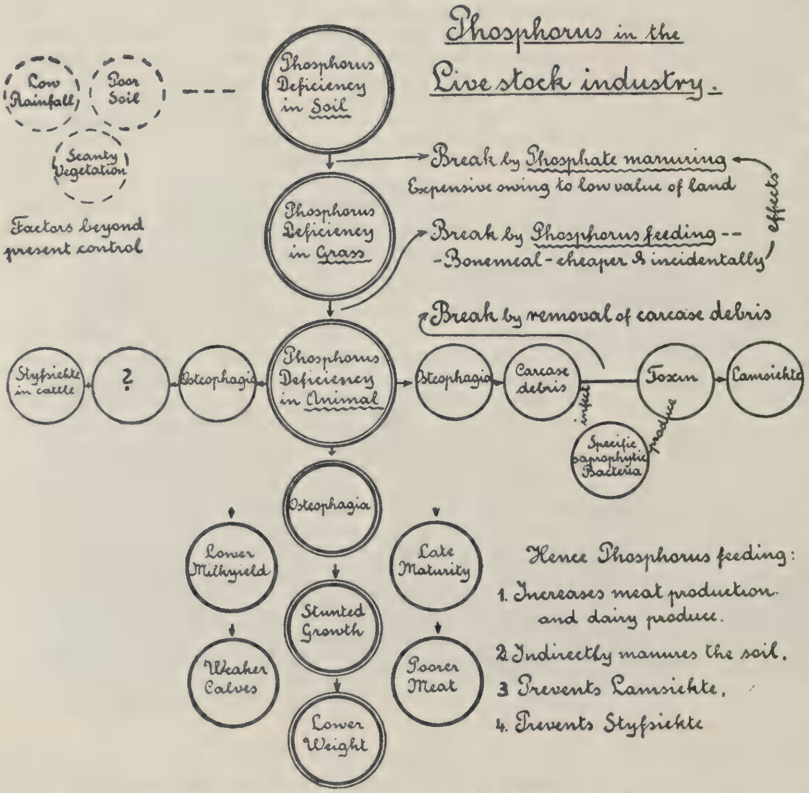
Phosphorus in the
Live stock industry.
Low Rainfall
Poor Soil
Scanty Vegetation
Factors beyond present control
Phosphorus Deficiency in Soil
Break by Phosphate manuring
Expensive owing to low value of land
effects
Phosphorus Deficiency in Grass
Break by Phosphorus feeding --
-Bonemeal - cheaper & incidentally
Break by removal of carcase debris
Styfsiekte in cattle
?
Osteophagia
Phosphorus Deficiency in Animal
Osteophagia
Carcase debris
infect
Toxin
Lamsiekte
produce
Specific saprophytic Bacteria
Osteophagia
Lower Milkyield
Late Maturity
Stunted Growth
Weaker Calves
Poorer Meat
Lower Weight
Hence Phosphorus feeding:
1. Increases meat production and dairy produce.
2. Indirectly manures the soil.
3 Prevents Lamsiekte.
4. Prevents Styfsiekte

Diagram showing effects on animals of phosphorus deficiency.

FIG. 4.

The Students' Hostel.

Heartwater.—In 1923 the director of the Rockefeller Institute suggested that one of his staff should visit the institute for the purpose of comparing pathological conditions of animals found in other parts of the world with those prevalent in South Africa; accordingly Dr. E. V. Cowdry arrived at Onderstepoort in June, 1924, and left early in 1925, for the purpose of studying heartwater. The results of the investigations led to the discovery of rickettsia as the cause of heartwater, thus relating the South African disease to the Rocky Mountain fever of America. It is hoped that his visit will lead to an interchange of officers between South Africa and the United States, an arrangement which should react beneficially on the progress of comparative pathology in both countries.

Veterinary Education.

In 1920 educational duties were undertaken for the first time and blocks of buildings, including students' laboratories, lecture theatres, and a students' hostel (Fig. 4), were opened. The course extends over five years leading up to the degree of Bachelor of Veterinary Science (B.V.Sc.) in the University of South Africa. The Doctorate (D.V.Sc.) is attainable not less than two years after qualification by those engaged in research work, and not less than four years after qualification by practising veterinary surgeons on submission of a suitable original thesis. The first two years of preliminary scientific studies are taken at one of the colleges of the University of South Africa or at the Witwatersrand University, while the three vocational years are spent at Onderstepoort.

It is stated that, partly owing to the fact that B.V.Sc. graduates in Government service are now graded on a scale commensurate with the length, severity, and expense of the curriculum, the class of students attracted is very good; this enables a high teaching standard to be maintained. Inquiries are constantly being received from various sources concerning the facilities offered to foreign graduates who desire to specialise in subtropical veterinary science, and the question of running a special postgraduate course for overseas veterinarians is under consideration. An advantage to students is that all the professors and lecturers are primarily research officers with ordinary official duties cognate to the subjects they profess. Preparation for tutorial duties is made outside official hours; teaching officers are graded £100 per annum higher than ordinary officers if of lecturer rank, and £200 higher if of professorial rank. In this way the five professors and eight lecturers are provided at the cost of only two full professorships at any of the Colleges of the University; at the same time teaching is conducted by specialists who, in turn, benefit by the need of keeping themselves up to date over the whole range of their particular subject.

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[2] Journal of the Department of Agriculture of the Union of South Africa, December, 1924, p. 530.

The system is obviously economical and appears to be working well; indeed, it is held that the advantages of grafting the Veterinary Faculty of the University of South Africa on to the pre-existing division of veterinary research are becoming more apparent every year. Most of the required post-mortem material, embryological material, clinical cases, and the like, are obtained as by-products of the research and routine activities of the division; medical and surgical wards for domestic pets and operating theatres are provided for the benefit of students. Inasmuch as the staff, equipment, and material are already necessary for official work irrespective of the veterinary faculty, the resources for the training of students and post-graduates are exceptional in a new school. This institute should secure recognition as one of the primary centres in the British Empire for the teaching of tropical and subtropical veterinary science, and for post-graduate research work in comparative pathology.

PROCEEDINGS OF THE ROYAL COMMISSION ON NATIONAL HEALTH INSURANCE.*

(Continued from p. 1124.)

Official Evidence (Q. 23830-24024).

Mr. Brock and Dr. Smith Whitaker continued their evidence and were asked whether they would favour the provision of the services of doctor and midwife as a first charge on the money available for maternity benefit. Mr. Brock said :—

> The present cash benefit is popular, and any change which made the provision of midwives or doctors a first charge on the money available would not be readily accepted by the insured population, unless it left at least a substantial balance in cash in addition to the services in kind.

In general, with regard to this benefit and the question of linking-up the various arrangements for maternity services, the witness said that there was a great deal of overlapping and probably a good deal of waste, and it would be most desirable, if it could be arranged, to have a scheme that brought the family doctor, the midwife, the specialist, if necessary, and all the services that are available at the maternity centre under a common scheme and a common control, so that they each played their proper part and were brought into proper relation with one another, helping one another instead of acting at a distance as they do now. The difficulty was how the finance could be arranged.

Dental Services.

Mr. Brock agreed that dental treatment as a statutory benefit was most desirable if the money could be found. Something like three-quarters of the industrial population were suffering from dental defects, and the experience of societies giving dental treatment as an additional benefit gave ground for hoping that systematic dental treatment would lead ultimately to a reduction of sickness benefit claims. As from the beginning of this year schemes were in operation under which societies allowed free choice of dentist.

With regard to the scale of fees which would be in force for a national scheme, Mr. Brock said :—

> Unless the scale is sufficiently generous to attract the men of better standing, you will not get the level of work which is really desirable. It would be unfortunate if insurance dentistry came to be looked upon as the cheapest and nastiest form of dentistry.

The cost of a complete service could not be very closely estimated because it depends not only on the extent of the need, but on the extent of the demand. It was thought, however, that 6*s.* per insured person per annum would be the lowest figure at which it would be safe to estimate the cost of a comprehensive dental benefit which did not provide for any contribution on the part of the insured person.

On the question of contributions towards the cost by the patients, the witness said :—

> Any contribution by the insured person is always open to the objection that it will have the effect of ruling out the most necessitous class. Probably the great majority of insured people could afford to find £2 towards the cost of dentures, and the experience of the dental hospitals where they generally require a contribution to the denture cost is that in nearly all cases the money is ultimately forthcoming.

Cases of hardship might be met by the application of the surplus funds of societies to this purpose as an additional benefit.

With regard to dental clinics, the witness said that the economic advantages could only be secured in urban areas; if any system of consultant centres were established, it might be possible to combine dental centres with them. On other aspects of a dental service Mr. Brock said that the service would not lend itself to payment on a capitation basis, and that negotiations in regard to such a service could best be carried on with a joint committee (if one were set up) of the British Dental Association and the Public Dental Services Association.

Optical Treatment.

On the question of the conflicting evidence on the subject of sight testing from representatives of the medical profession and opticians respectively, Dr. Smith Whitaker said that the Ministry had themselves found on an independent examination of the question that the evidence was very conflicting. There were difficult cases of errors of refraction without any other disease of the eye, or disease of the body generally, which required the use of methods of examination which should only be carried out by people who have had a complete medical training.

> On the other hand, there is a general impression, certainly among laymen, shared, I think, by some members of the medical profession, that quite a considerable proportion of cases of visual defects, particularly in elderly people, can be, and in fact are, being treated without any obvious injury to the patient by people who have had no medical training, and in some cases even by people who have not had the special training in the measurement of refractive errors that some sight-testing opticians have received.

The difficulty was to measure the amount of risk that really arises through such cases being treated by people who have not had a medical training.

The Board of Education have had to consider this question in connexion with the inspection and treatment of school children, and they have adopted from the beginning the policy of employing, for the diagnosis and treatment of errors of refraction, medical practitioners only who have had a special training in sight testing. If the responsibility were assumed by the State or by any public authority of providing a public system, the question would be whether they could safely adopt any other policy than that which the Board of Education has adopted.

The question of qualification in eye work for men who have any kind of surgical aptitude at all is mainly a question of their being able to get the requisite amount of experience.

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* References to the paragraphs in the printed statements issued as appendices to the reports of the oral evidence are given thus: "App. X. 69," and references to the oral evidence thus—Q. 1369.

> Most doctors . . . are potentially qualified, and if the work were there to be done, they would soon become really qualified. You do not need for the testing of errors of refraction the special skill of an ophthalmic surgeon who undertakes all kinds of delicate operations on the eye.

Asked whether ophthalmic benefit, including the provision of glasses, could only be included amongst the normal benefits available to all insured persons as part of a large scheme for the extension of medical benefit to include a specialist service, the witness said that that would doubtless be so if the benefit were to provide for the treatment by specialists of all diseases and injuries of the eye, but it was thought that—

> An ophthalmic benefit that was restricted to the treatment of errors of refraction, including the provision of glasses, might be brought within the scope of medical benefit independently of any general inclusion of specialist services, and it would be worth providing if the money were available, even although other specialist services were not at the same time made available.

The cost on the basis of 6*d.* an insured person would be under £400,000 a year.

Nursing Service.—Massage.

With regard to a domiciliary nursing service, the witnesses expressed doubt whether a service could be provided of sufficient value to justify the application of funds which might be applied in other directions where at present there was no organised service. In the case of nursing, the district nursing associations already covered the ground to a very considerable extent. The societies had shown little disposition to apply their surpluses in the recent valuation towards schemes for nursing services.

Dr. Smith Whitaker said there could be no doubt as to the value of massage and electrical treatment, particularly for cases of after-effects of injuries and rheumatic conditions by which a large amount of prolonged incapacity for work is produced. If funds would permit of such a service it would be more economically and efficiently provided as a part of statutory medical benefit rather than as a separate service given by the Approved Societies.

Insurance Committees.

With regard to the criticism of the Insurance Committee system, Mr. Brock said that this seemed to be well founded. The representatives of Approved Societies on the Committees, to a large extent, are lacking in experience of public administration, and the effective work of committees had become so limited in range as to offer little inducement to public-spirited people to serve.

> If you give them more work to do, say an extension of their general health duties, you bring them into competition with the other local health authorities, and you also tempt them to undertake work in which they really need the guidance of the sort of expert medical staff that the local authority has and which the Insurance Committee has not.

Mr. Brock made it quite clear that the work of the Insurance Committee staffs was in a different category.

> The Insurance Committees' staffs have done their work exceedingly well, and I want to make it quite clear that, while I cannot dissent from the general criticism of Insurance Committees, I do want to pay my tribute to the efficiency of the work of their staffs.

With regard to the future of the Insurance Medical Service, Mr. Brock said :—

> We think a transfer of the powers and duties of Insurance Committees to the appropriate committees of the county and county borough councils would have the great advantage of being a step towards the coördination of all local health functions which is generally recognised as the logical corollary of the coördination of central health functions in the Ministry of Health. It would certainly facilitate coördination between insurance and other public health services, and it would secure the independent expert advice of the medical officer of health and other medical officers of the councils. We should agree that if the functions of Insurance Committees are to be transferred to the councils, then, whatever committee is charged with these duties, it is desirable that it should contain a strong co-opted element, including adequate representation of the doctors.

Other Points relating to Medical Benefit.

The present capitation fee is 9*s.*, and it was not thought that any further inquiry would be likely to lead to a different result. The cost of drugs for the insured population was rising, and the biggest factor in the rise was increased frequency in prescribing in which undoubtedly there was some element of waste.

As to the distribution amongst doctors of that part of the medical pool which related to insured persons who have not selected a doctor, it was pointed out that the great bulk of these were new entrants who very often postpone their choice until they find themselves in actual need of treatment.

As to limitation of numbers on doctors' lists, Mr. Brock said :—

> Our experience does not suggest that there would be any danger in reverting to the previous limit of 3000 for a practitioner working single-handed, but we see no reason for revising the present figure, which was arrived at by agreement between both parties. . . . We do attach importance to a strict limitation of the number of assistants to be employed in order to prevent the farming out of insurance practice.

The unrestricted right of any qualified medical practitioner to be admitted to the panel ought, in the opinion of the Ministry, to continue. Objection to a doctor's inclusion on the ground of his bad record might bring the Committee into conflict with the General Medical Council.

> It is perfectly true that doctors are from time to time removed from the medical list for offences which the General Medical Council may not regard as justifying removal from the register, but these are definite acts in relation to insured persons which have to be established before a competent committee of inquiry. This is quite a different thing from objecting to a doctor on the general ground of his conduct at some time in the past when he was not subject to any disciplinary control apart from that of the General Medical Council.

The suggestion which had been put forward that a doctor's admission to the list should be conditional on the provision of satisfactory surgery accommodation was not well advised, because the standard of adequacy must depend upon the number of patients for whom the doctor accepts responsibility. Until he has come on the list he can have no insured patients, and the adequacy of his surgery accommodation cannot in fairness be considered except in relation to his actual obligations.

THE MEDICAL INSURANCE AGENCY.

A MEETING of the Committee of Management of the Medical Insurance Agency was held at the House of the British Medical Association, Tavistock-square, W.C., on Dec. 2nd, Sir Humphry Rolleston, the Chairman, presiding. A report of the work of the Agency during the year ending Dec. 31st, 1924, to which a financial statement was appended, was read by the Chairman, and showed that during the year under review the Agency maintained its regular progress ; the high standard of former years in new life business transactions was repeated, while in motor-car insurance there was a steady increase, principally due to the special policy which the Agency has been able to secure on behalf of medical men. There was a substantial increase in rebates in all branches except that of Employers Liability, the figures showing a direct benefit to medical men and women insuring through the Agency. After the payment of income-tax, a claim for which was settled under protest, there remained for the year 1924 considerable increase in surplus to be carried to the Medical Benefit Account.

An interim report was received from the Secretary covering the first nine months of the current year, and during this period the rate of progress was more than maintained. The Agency introduced during the first nine months of 1925 no less than £134,400 in insurance, spreading the insurances over first-class companies.

Other business of the Committee consisted in the election to its body of Dr. R. A. Bolam and Mr. Bishop Harman, and the appointment of two useful subcommittees. The first of these, the members being Dr. H. A. Des Voeux, Dr. R. A. Gibbons, and Mr. Bishop Harman, was authorised to consider the future of the Agency and to draw up a scheme, if found advisable, for its incorporation into a Limited Liability Company; the members were empowered to take the necessary legal advice. The second subcommittee, composed of Sir Humphry Rolleston, Dr. R. A. Gibbons, and Mrs. Arthur Ormond, was appointed to consider and report upon the best use of the Girls Education Fund, and it was decided that for the ensuing year one member of this subcommittee should be elected from among the members of the Committee of the Royal Medical Benevolent Fund Guild.

The result of two full years' working of the Scheme for Technical Advice on the purchase of motor-cars, existing between Messrs. Mann Egerton and Co. and the Agency, can now be seen, and in the report the thanks of the Agency were expressed to their consulting engineers for the able manner in which so many difficult questions had been handled.

Grants to Medical Charities.

The Committee resolved that out of the balance standing to the credit of the Medical Benevolent Account, the following grants should be made :—

	£	s.
Royal Medical Benevolent Fund	525	0
Royal Medical Benevolent Fund Guild ..	525	0
Epsom College Benevolent Fund	525	0
(This grant was divided by the Committee in such a way as to leave a grant in the name of Sir Dawson Williams of £105, and a similar grant in the name of Sir Squire Sprigge)		
Educational Grants (Girls Subcommittee) ..	210	0
B.M.A. Charities Fund	157	10
Royal Medical Benevolent Fund Christmas Appeal..	52	10
Royal Home for Incurables, Putney	52	10
Birmingham Medical Benevolent Society ..	26	5
THE LANCET, Editor's Discretionary Fund ..	26	5
Total..	2100	0

As a result of this distribution the total sum subscribed to medical charities by this Agency since 1910 has exceeded £14,000.

Special Grant to Agent.

A grant of £105 was made to Mr. P. N. Adamthwaite to mark the Committee's pleasure at the success of the Scheme for Technical Advice.

IRELAND.

(FROM OUR OWN CORRESPONDENT.)

The Dublin Hospitals and Workmen's Compensation.

THE Dublin hospitals have been forced by circumstances in the past few years to look carefully into the possibility of recovering the expenses of patients' treatment if anyone can be made responsible for such expenses. A special problem is presented by the case of workmen to whom accidents occur in the course of their employment. These patients receive free treatment, often extending over weeks or months, and, eventually, many of them recover damages from their employers. The award is supposed to cover expenses of treatment, but the hospital bill is rarely paid. Dr. Horace Law, on behalf of the Board of Associated Clinical Hospitals of Dublin, put this case before the Committee on Workmen's Compensation last week. He pointed out that the main provision of medical and surgical treatment for cases coming under the Workmen's Compensation Acts had for many years been made by the voluntary hospitals, and that there was no provision for hospital expenses in the case of accident or illness in the course of employment unless (1) the worker had arranged for it by previous payment in trade-unions or guilds; (2) paid himself for his maintenance in the hospital; or (3) the employer had subscribed to the hospital. There was no power to compel the employer or the insurance companies who had insured the employer to pay direct to the hospital or to contribute to the payment for the maintenance of the patient in hospital.

Regius Professor of Physic in Dublin University.

Dr. T. G. Moorhead, King's professor of materia medica in the School of Physic, has been elected Regius Professor of Physic in the University of Dublin, in place of Dr. J. M. Purser, resigned. Dr. Moorhead had a brilliant course in the school, winning exhibitions and scholarships and the Medical Travelling Prize. Having taken his degrees in 1901, he spent a year as chief demonstrator of anatomy in the school, and in 1902 was appointed assistant physician to Sir P. Dun's Hospital. In 1903 he became physician to the Royal City of Dublin Hospital, and in 1921 he was elected King's professor of materia medica. He has long been recognised as one of the leading teachers and clinicians in the Dublin school. He is still a young man and may be expected to bring energy and vision to the duties of his new post.

PARIS.

(FROM OUR OWN CORRESPONDENT.)

Formal Opening of the University of Paris.

ALL faculties of the University of Paris assisted at the formal annual opening of the University on Nov. 28th. It is the custom at such openings to announce the University's awards of honorary degrees. At the opening for this year those receiving the doctorate, *honoris causâ*, were Sir Ernest Rutherford, Mr. de la Vallée-Poussin, Prof. Edwin R. Seligman, Sir Paul Vinogradof, Signor Ettore Pais, Sir Edmund Gosse, Dr. Noguchi, and Prof. Pavlov. The work of Rutherford in radioactivity, that of Noguchi, of the Rockefeller Institute, New York, in yellow fever, vaccinotherapy, and serotherapy, and that of Pavlov in gastric physiology are well known in the field of medicine. The other names represent mathematics, economics, jurisprudence, archæology, and literature. As usual, the university ceremonies presented a mediæval setting of gorgeous gowns, hoods, and caps, and armoured men-at-arms.

The Entry into the Medical Profession.

During the academic year 1924–25 there was a slight diminution from the preceding year in the number of diplomas of doctor of medicine granted by the Medical Faculties of France—namely, 1047, as compared with 1123. The distribution over the various medical schools was as follows: Paris 481, Lyons 139, Bordeaux 123, Montpellier 103, Toulouse 53, Strasbourg 41, Lille 33, Algiers 31, Beirut 22, and Nancy 21. These numbers represent only the State diplomas, and do not include 93 university diplomas granted to foreigners, which do not entitle the holder to practise in France.

Poisoning by Carbon Monoxide.

As winter has brought with it the necessity for the use of coke stoves, several cases of poisoning by carbon monoxide have occurred. In one case-group three persons died from such poisoning, induced by defective ventilation in a chimney. In a second example, a man and wife were found dead in bed, the poisoning having apparently been produced by a worn-out stove, the carbon monoxide pouring into the room through cracks and holes in the casing. The two deaths of the second case-group constituted the subject of a striking demonstration made by Prof. Balthazard, who conducted the autopsies at the Institute of Legal Medicine, which replaces the former Morgue of literary and historic fame.

Annual Meeting of the Grancher Clinic.

The annual meeting of the Grancher antituberculosis clinic was held on Nov. 28th. This clinic has become known internationally in the field of tuberculosis. Madame Pasteur was formerly the president of this endeavour. Her daughter, Madame Vallèry-Radot, is now president, thus continuing the noble traditions of the Pasteurs. At the meeting Dr. Calmette delivered an eloquent address, in which he emphasised the economic value of preventing, rather than treating, tuberculosis.

The sale of stamps for raising money to aid the antituberculosis campaign has been launched for the first time in France. It will be tried out by the National Committee of Defence against Tuberculosis in the Département of Meurthe-et-Moselle.

Insulin and Pregnancy.

Pregnancy is not welcome to diabetic women. Obstetricians have often counselled abortion in such cases, as the evolution of the ovum may be abnormal, hydramnios is frequent, and the size of the products of conception often excessive. As a rule, the fœtus succumbs either in the course of gestation, during labour, or shortly after birth. The effect of pregnancy on the diabetic subject herself is often bad; the disease tends to become aggravated after the sixth month, and death in the puerperium or soon after is not rare. Prof. Marcel Labbé and Prof. Couvelaire have reported to the Academy of Medicine a case which demonstrates how completely the exhibition of insulin has changed the outlook. With insulin a diabetic woman, who would otherwise have aborted or died of acidosis, may go on to term and give birth to a healthy child. Women with diabetes should avoid conception if they can, but should pregnancy occur a strict dietary and the skilful administration of insulin may bring about a happy issue.

Death of Prof. Wallich.

Prof. Victor Wallich, of the Faculté and Académie de Médecine, died on Nov. 29th at the age of 62. Dr. Wallich made many valuable contributions in pathology, obstetrics, physiology, and serotherapy, and was especially active in the field of puericulture, where he served as a pupil of Pinard. In his teaching he utilised cinematographic films. His death leaves a vacancy which will not be easily filled.

Male Responsibility in Infanticide.

In consequence of a recent trial at Paris, in which a young woman, seduced and deserted, had killed her new-born infant, and the legal penalties were abrogated, a movement was initiated for legislation designed to extend to the male responsibility in such cases. The new movement has taken the form of a resolution which, it is hoped, will pave the way for formal legal action.

Increasing Pensions in War Disability.

As now exercised, the French veteran pension laws do not fully provide appraisement of 100 per cent. disability for certain cases in which, nevertheless, the disability is total. The cases referred to are those of tremor and other neuropathies. A movement is now progressing to permit such cases to be assessed at the full disability of 100 per cent., and thus to receive adequate monetary allowance. The new movement does not extend to cases where re-education is possible.

"12 bis."

In the official list of notifiable infectious diseases puerperal fever and ophthalmia neonatorum are at present included under the same number—"12." This grouping has been found to stand in the way of trustworthy statistics being compiled, and hence of proper prophylactic measures. For this reason, on the representation of the Medico-Chirurgical Society of Bordeaux, the Academy of Medicine has decided to urge the Minister of Hygiene to make ophthalmia neonatorum notifiable under the number "12 bis."

Dr. Jacques Forestier, of Aix-les-Bains, well known for his work in radiology in collaboration with Prof. Sicard, has been invited by the American Radiological Association to visit the United States, where he will deliver a series of lectures on recent advances in radiology.

In a thesis on drug addiction, presented to the Academy of Medicine, Dr. Tardieu mentions a case of suicide due to veronal ingested in *coquetels*, the term applied to a beverage in common use in the neighbourhood of Bordeaux. French papers are claiming priority in the "cocktail" for the Bordelais.

Public Health Services.

REPORTS OF MEDICAL OFFICERS OF HEALTH.

THE following table gives some of the 1924 statistics for a group, composed of one city, one borough, and seven county boroughs. The low birth-rates and high neonatal mortalities in the "mill" towns attract attention, especially when compared with towns in mining areas like Sunderland and Wigan, where the total infant mortality-rate is not low.

Name of town.	Estimated mid-year population (R.-G.).	Birth-rate.	Death-rates per 1000 of the population.				Death-rates per 1000 births.		
			All causes.	Tuberculosis.	Cancer.	Resp. diseases with influenza.	Neonatal mortality.	Infant mortality.	Maternal mort. from childbirth.
Cardiff C.	226,400	21·6	12·1	1·52	1·13	2·6	28	78	5·3
Sunderland C.B.	165,100	25·9	15·0	1·42	1·06	4·2	34	101	4·4
Bolton C.B. . .	181,100	17·6	14·0	1·12	1·34	3·3	36	92	7·8
Oldham C.B. . .	147,300	16·3	13·7	1·20	1·41	3·3	51	111	2·9
Bury C.B.	56,830	15·5	14·7	0·93	1·72	3·4	38	71	4·5
Wigan C.B. . .	91,180	21·9	14·3	0·92	0·76	3·9	31	107	6·0
Derby C.B. . .	133,700	19·2	11·3	1·03	1·29	2·0	25	62	1·9
West Bromwich C.B.	78,730	23·6	12·2	0·86	0·99	3·6	40	89	2·2
Nuneaton B. . .	44,620	21·6	9·7	1·03	0·98	1·6	36	59	7·2

C. = City. B. = Borough. C.B. = County Borough.

Cardiff.

Dr. Ralph M. F. Picken reports that the increased prevalence of encephalitis lethargica has not yet affected Cardiff. Only ten cases came to the knowledge of the health department, and cases appear to have been equally scarce in Swansea, Newport, and Merthyr.

Last year a chart was included in the report showing the upward tendency of the mortality from pulmonary tuberculosis in Cardiff, a tendency which Dr. Picken has not traced in any other large city. Although the mortality was a little lower in 1924, the rate is high compared with other large towns. Thus among the 17 largest towns of England and Wales during 1924 Liverpool heads the list with a rate of 1300 per million from pulmonary tuberculosis, and Cardiff comes second with a rate of 1276, Sheffield being lowest with a rate of 821. For all forms of tuberculosis Cardiff was worse than Liverpool and was highest of all those towns with populations exceeding 200,000. Up to now Dr. Picken has been unable to account for this by any cause relating to the nationality or origin of the population, or their age-distribution or any climatic or environmental factor operating in the city. The occupational table, however, of newly notified cases of tuberculosis, which is given for the first time in the report, shows a very high proportion of seafaring men. Thus out of 221 males notified for pulmonary tuberculosis 47 were seamen. The only other occupations which reached double figures were clerks, typists, &c., 19, and labourers, 30. Of the 63 notified male cases of non-pulmonary tuberculosis the occupation of seamen furnished 9, while there were 13 children of school age and 14 children under school age. The figures somewhat confirm the remarks of Dr. Howard Jones in his report to the Newport Port Sanitary Authority. Dr. Picken reports a decline in the number of new cases at the V.D. clinics at the Royal Infirmary and the Seamen's Hospital. The figures have shown for some time that these centres do not attract the innocently acquired cases among women and children. To meet this difficulty special clinics are to be held at least twice a week in connexion with the maternity and child welfare scheme.

The Cancer Local Advisory Committee met towards the end of 1924 and drew up a plan of campaign. With the coöperation of the management of the infirmary it is hoped shortly to complete a statement showing the remote results of operations for cancer of the breast over a number of years. Voluntary notification has been adopted and a leaflet on cancer of the breast has been issued, pointing out to women the importance of consulting a doctor at once if any swelling or lump in the breast is noticed. The antenatal clinic, conducted jointly by the local authority and the Royal Infirmary, was opened on Dec. 18th, 1924, and at the time of writing bids fair to justify the hopes entertained as to its value. A room at the new clinic at 50, Park-place has been set apart and equipped for dealing with crippled children of all ages. A specially qualified nurse has been appointed to follow up such cases, to keep them in touch with the Prince of Wales's Hospital, and to administer massage, electricity, and postural treatment. Of the 286 cripples known to the department on August 31st, 1925, 93 were under the age of 5, 66 of whom were crippled by poliomyelitis and 12 by rickets. Of 188 cripples, aged from 5 to 16 years, 75 were the victims of poliomyelitis, 25 of tuberculosis, and 13 of rickets. The fact that there are only 5 known cases of rippling over the age of 16 shows that the registration for later ages is quite incomplete.

Dr. Picken thinks that the maternity and child welfare organisation would be improved if it were found administratively convenient to amalgamate the school medical nursing staff and the health visitors on lines similar to the amalgamation of the medical staff.

Sunderland.

Dr. Henry Renney reports that of 106 samples of milk examined for tubercle, 11 gave a positive result. In all cases the milks came from farms outside the borough, and in the majority of cases the veterinary surgeon on visiting found cows suffering from tuberculosis of the udder. The usual procedure adopted was to obtain an undertaking in writing from the farmer that he would not send milk from the infected cow into the borough. The antenatal centre at the maternity home has been given up, but the centrally situated antenatal centre has become "exceedingly popular" and an extension of its hours is necessary to meet the demand. Of the 115 cases of ophthalmia neonatorum notified, 94 were treated at the Eye Infirmary. Midwives attended 73·6 per cent. of the total births. There being no further need of a municipal midwife at the East End of the town, the office was terminated in December. There was only one case of puerperal fever notified during the year and no case occurred in the practice of a midwife. About 50 voluntary workers attend every week at the 11 infant welfare centres.

For the first time in 50 years there were no deaths from scarlet fever in the borough. The notifications of encephalitis lethargica, which numbered 4 in 1923, were 37 in 1924. There were only 2 deaths and no mention is made of steps taken to verify the diagnosis.

Bolton.

Dr. C. W. Paget Moffatt reports that the opening of the Moss-street baths and washhouses in October has conferred a great boon on the inhabitants. The building contains swimming baths for men and women, 18 slipper baths, and 24 washhouse stalls. The washhouses have so obviously supplied a very urgent want that it is hoped the same provision may be made before long in other quarters of the town. Dr. Moffatt presses the need for reasonably accessible playing fields for the younger members of the community. For non-pulmonary tuberculosis in children Bolton has a call on six beds at the Liverpool Children's Hospital, Heswall. This is not enough, and proposals are under consideration for a complete scheme for the treatment and care of cripples, including surgical tuberculosis.

Dr. Moffatt refers to the stationary position of the maternal and neonatal death-rates during the last 20 years. Thus for 1905–14 the neonatal rate was 41·7, and for 1915–24 it was 40·3. As regards prenatal work, Dr. Moffatt says it is essential that this work should now be extended by the establishment of a prenatal clinic in charge of a competent obstetrician. The Haslam Maternity Home admitted 220 cases during 1924. There were no maternal deaths during the year. In eight cases the baby was not entirely breast-fed while in the institution, in six cases because the milk was insufficient, in one case because the milk was not suitable, and in one case because the infant was premature. Six cases of insufficiency out of 220 cases is a high percentage. Notifications of encephalitis lethargica showed an increase. There were 40 cases with 17 deaths. All the notifying doctors were asked to supply particulars as to the present (i.e., May, 1925) condition. Of 26 survivors, 13 were reported to have recovered completely, six to be improving, and the remainder to be suffering from various forms of paralysis and mental and nervous symptoms. One case notified on April 5th committed suicide on Nov. 12th. In five cases certified to have died from this disease there had been no notification. The analyst's report shows that the percentage of cereal in shredded suet samples varied from 11 to 21. Ten per cent. of cereal is considered adequate to make a marketable product and any excess over this limit is added solely for extra profit.

Oldham.

Dr. James B. Wilkinson reports as the principal item in the year's work the Ministry's inquiry *re* the clearance of the Smethurst-street unsanitary area, which has been under consideration for over 14 years. The area covers 4·9 acres, contains 259 houses, and has a population of 1425 persons. The Coldhurst ward, in which the area is situated, had an infant mortality of 205 during 1924. There has been very little addition made to the house accommodation for the working classes during the year. The results from the treatment of a few marasmic and rickety babies at Westhulme Hospital have been so satisfactory that a small baby's hospital has been sanctioned by the Ministry of Health. Dr. Wilkinson draws attention to the fact that the only two wards which have a birth-rate of over 20 have low infantile mortality-rates. The damage done by ophthalmia neonatorum was one blinded baby, one with vision severely impaired, and one with vision slightly impaired. 13*s.* to 15*s.* per week for a single room containing a minimum amount of bedding and dilapidated furniture is a very usual charge, and shows that owing to the scarcity of houses "furnished rooms" can obtain just as high a rental as ever.

Bury.

Dr. G. Granville Buckley reports that the infant mortality-rate of 71 is by far the lowest ever recorded in the borough and compares with 101 for the year 1923. The Bury sanitary authority arrange with the Bury Infirmary for the treatment of complicated cases of labour and of non-pulmonary tuberculosis, and with the Manchester and Salford Hospital for Skin Diseases for patients suffering from tuberculosis of the skin. During 1924 eight cases of complicated labour and ten skin cases were treated under these arrangements. The tuberculosis dispensary, which was presented to the town by the Earl of Derby, is used jointly by the borough and the county council.

Wigan.

Dr. Henry Whitehead reports that there was a severe epidemic of measles during the latter part of the year. There were 78 deaths from this disease, making the unusually high death-rate of 0·85. In October two nurses from the Infectious Diseases Hospital were detailed to visit the cases and nurse the worst ones, and a third nurse began work in November. An up-to-date milk pasteurising plant has been established in the town, and in June the health committee decided to purchase pasteurised milk in bottles for the maternity and child welfare scheme and pasteurised milk in sealed kits for the supply of the borough hospitals. Dr. Whitehead records a small milk-borne outbreak of paratyphoid B. Eight cases were notified within ten days and were found to be supplied by two milkmen, who obtained their milk from the same farm outside the borough. A visit to the farm showed that the farmer had suffered from typhoid fever five years previously, and that his three daughters were out of health, one being convalescent and the other two ill with "influenza." Blood tests showed that all four were strongly positive to paratyphoid B. It seemed probable that the farmer was a carrier and had been the means of infecting his three daughters and the eight patients within the borough. Dr. Whitehead points out that pasteurisation would have prevented this outbreak. The scheme for the conversion of all privies and pail-closets to water-closets is going on very satisfactorily. Additional water-closets are also provided, when necessary, to enable each house to have its own convenience. Although more houses were built in 1924 than in 1923—namely, 74 compared with 23—the housing shortage is becoming more and more acute, and in consequence no definite progress can be made in dealing effectually with unsanitary areas or unsanitary dwellings.

Derby.

Dr. Albert E. Brindley reports an increase of encephalitis lethargica, there being 18 notifications and nine deaths. Small-pox became epidemic in April and continued throughout the year, 210 cases being notified with no deaths. The shortage of houses still prevents the demolition of unsanitary dwellings. From August, 1919, to the end of June, 1925, 940 new houses were built under the corporation scheme. At June 30th, 1925, 174 houses were in course of erection and 675 are to be begun in the near future. The natural increase of the population during the three years 1922–24 would absorb 750 houses. The mayor has put forward an urgent plea for the more rapid provision of houses, even if the construction is more or less of a temporary nature, and Dr. Brindley supports this view. Other needs of Derby are the increase of accommodation for patients and nurses at the isolation hospital, the extension of the dental service for expectant and nursing mothers, facilities for the dental treatment of tuberculous patients, and of patients in the isolation hospital, and the provision of an X ray installation.

West Bromwich.

Dr. R. Woolsey Stocks notes an increase in the attendances at infant welfare centres, but stresses the importance of extension of the work amongst toddlers and expectant mothers. He points out that the four maternal deaths from childbirth might have been prevented by antenatal attention, and that one can only hope to deal effectively with the high neonatal mortality by systematic antenatal examination. The number of mothers attending the antenatal clinic has increased to 150 from 51 in the previous years, and the number of mothers who submitted themselves for examination by the doctor was 94, as compared with 16 in the previous year. As the births numbered 1862 it will be seen that the antenatal work is on a very small scale. There is an improvement as regards the coöperation of the midwives, but there are still a number of midwives who never advise their prospective patients to come to the antenatal clinic, and "it is through the midwives that the greatest advance can be looked for in this work."

Nuneaton.

Dr. K. E. Tapper presents his third and last report before taking up his new duties at Bromley. He expresses his satisfaction that the infant mortality-rate has reached a figure below 60 for the first time, and in his report he indicates how further reduction may be obtained. Thus nearly half the infant deaths occurred in the first week, and 105 of the babies had been partially taken off the breast before the first visit of the health visitor. The total births numbered 971; antenatal sessions had only just been started at the end of the current year. The housing and living conditions of a portion of the population "are nothing less than deplorable." They are not wholly remediable by adequate housing conditions, as the "deplorable tenants" must be shown the error of their ways. A routine veterinary inspection of the milk cows in the borough has been begun. Thirty-five cases of small-pox were notified with no deaths. The deaths from encephalitis lethargica numbered five, the notifications 13. Dr. Tapper puts in a plea for a maternity home with accommodation for ailing babies. He sums up the housing needs of the borough as 500 new houses for 1925 and 300 for each of the next nine years. Thirty-four houses were erected under the municipal scheme for 1924.

INFECTIOUS DISEASE IN ENGLAND AND WALES DURING THE WEEK ENDED NOV. 28TH, 1925.

Notifications.—The following cases of infectious disease were notified during the week:—Small-pox, 105 (as under); scarlet fever, 2195; diphtheria, 1091; enteric fever, 54; pneumonia, 1531 (as compared with 1186 and 889 in previous weeks); puerperal fever, 52; cerebro-spinal fever, 7; acute poliomyelitis, 7; acute polio-encephalitis, 2; encephalitis lethargica, 41; dysentery, 2; ophthalmia neonatorum, 91. There were no cases of cholera, plague, or typhus fever notified during the week.

The cases of small-pox were reported from the following counties:—Derby, 11 (Derby C.B.); Durham, 71 (Gateshead C.B., 2; Blaydon, 26; Chester-le-Street, 1; Ryton, 1; Whickham, 4; Chester-le-Street R.D., 7; Easington R.D., 7; Houghton-le-Spring R.D., 7; Lanchester R.D., 8; Sunderland R.D., 8); Northumberland, 8 (Newcastle-upon-Tyne C.B., 7; Castle Ward R.D., 1); Nottingham, 5 (Nottingham C.B., 1; Hucknall, 2; Huthwaite, 1; Basford R.D., 1); Yorks, East Riding, 4 (Kingston-upon-Hull); Yorks, West Riding, 6 (Sheffield C.B., 5; Rawmarsh, 1).

Deaths.—In the aggregate of great towns, including London, there were 3 deaths from enteric fever (1 in London); 50 from measles, 11 from scarlet fever, 40 from whooping-cough, 54 from diphtheria, and 73 from influenza. In London itself there were 15 deaths from diphtheria and 25 deaths of infants under 2 years of age from diarrhœa and enteritis.

VETERINARY RESEARCH.—The Council of the Royal College of Veterinary Surgeons has awarded the Steel Medal for Veterinary Research to Prof. S. H. Gaiger, F.R.C.V.S. Under the John Henry Steel Trust the Council of R.C.V.S. has power to award a medal once in three years as a reward for scientific or literary work of merit connected with the veterinary profession. Prof. Gaiger was until recently director of research in the Animal Diseases Research Association, Glasgow. He has done good work in connexion with several sheep diseases and has carried out some investigations into "grass disease" of horses. He has recently been appointed to the "William Prescott" Chair of the Care of Animals—Causation and Prevention of Disease, in the University of Liverpool.

The Services.

ROYAL ARMY MEDICAL CORPS.

Capt. G. O. F. Alley relinquishes the temp. rank of Maj. on ceasing to be empld. as a Dept. Asst. Dir. of Hygiene and Pathology.

Capt. F. C. Tibbs is granted the temp. rank of Maj. whilst empld. as a Dep. Asst. Dir. of Hygiene and Pathology.

Capt. H. Jacques to be Temp. Capt., and temporarily relinquishes the rank of Capt.

Capt. W. O. Tobias retires, receiving a gratuity.

TERRITORIAL ARMY.

Capt. J. A. Stenhouse to be Maj. (Prov.).

Lt. N. Braithwaite to be Capt., and Lt. J. C. MacKay to be Capt. (Prov.).

Lt. H. Miller (late R.A., T.A.), to be Lt.

ROYAL AIR FORCE.

Flight Lt. W. F. Wilson is promoted to the rank of Squadron Leader.

MEDICAL SERVICES IN INDIA.

The King has approved the relinquishment of their temporary commissions by Capt. Ramchander Kaushash and Lt. Shanker Ramchandra Joglekar.

The undermentioned, the relinquishment of whose temporary commission has been notified, is granted the rank of Capt: Nur Ahmed Quraishi, late temp. Capt.

Maj.-Gen. D. J. Collins, C.B., C.M.G., who has been officiating for Maj.-Gen. Robinson as D.M.S. India, has resumed his permanent appointment of D.D.M.S. Southern Command. Lt.-Col. A. K. Lauddie has handed over the charge of the District Jail, Ferozepore, to Dr. Jamna Das. Lt.-Col. H. W. Pierpoint, late residency surgeon, Bushire, has been appointed Superintendent of the X Ray Institute at Dehra Dun. Lt.-Col. G. McPherson has been appointed Civil Surgeon, Ahmednagar. Maj. G. Holroyd, on return from leave, is appointed Superintendent, Central Prison, Bareilly. Dr. A. Souza, Assistant Director of Public Health, United Provinces, has been deputed to Japan to participate in the tour of Health Officers in Japan organised by the League of Nations. Capt. G. D. Mahoutra officiates as O.C., Indian Station Hospital, and as Officer in Charge, Brigade Laboratory, Allahabad, during the absence on leave of Capt. M. L. Dhawan. Maj. J. L. Sen is appointed Civil Surgeon, Cachar, Assam. Maj.-Gen. R. Heard, C.I.E., ia appointed President of the Bengal Council of Medical Registration, vice Col. R. P. Wilson resigned. Maj. C. H. P. Allen has been appointed Civil Surgeon, Sadiya. Dr. P. Gupta has been appointed Assistant Director of Public Health, Assam. Lt.-Col. J. H. Murray has been confirmed as I.G. of Prisons, Bombay Presidency, vice Lt.-Col. F. O. M. Mell retired. He has proceeded on leave, and Maj. E. E. Doyle, D.S.O., Superintendent, Central Prison, Yerrowda, officiates for him. Maj. W. E. Rees Williams, D.A.D.M.S., Southern Command, proceeds on a year's leave; Maj. A. C. Wood acts for him. Rao Bahadur Dr. P. V. Shikhare, Bombay Medical Service, who represented the Bombay Government at the International Congress on Child Welfare in Switzerland last July, has returned to India and taken over the appointment of Civil Surgeon of Thana. Col. H. Ainsworth, Inspector-General of Civil Hospitals, Bihar and Orissa, has returned from leave and resumed his substantive appointment.

Jail Reform.—A conference of I.M.S. officers, acting as I.G.'s of Jail, was held in Madras last month to consider jail reforms in India.

DEATHS IN THE SERVICES.

Lt.-Col. Robert Evans Stuart Davis, I.M.S. (retd.), who died on Nov. 25th in Belfast, received his first commission in the Indian Medical Service in 1882. He served with the Burmese Expedition 1886–87 (mentioned in despatches, medal with clasp), and was for some time a civil surgeon at Rangoon. He retired in 1910.

Lt.-Col. James Comeford Sullivan Green, late R.A.M.C., died at Airhill, Glanworth, Co. Cork, at the age of 64 on Dec. 1st. He graduated in medicine and surgery at Dublin University in 1883. Having previously served in the army as surgeon, he was appointed Major, R.A.M.C., in 1897. He accompanied the expedition to Manipur in 1891 (medal with clasp), served in Burma during the two following years, and afterwards took part in the operations of the Irrawaddy Column. In the South African War, 1899–1902, he took part in the actions at Elandslaagte, Reitfontein, and Lombards Kop. He was present at the defence of Ladysmith and served in the operations in the Transvaal, Orange River Colony, and Cape Colony (Queen's medal with five clasps and King's medal with two clasps).

Correspondence.

"Audi alteram partem."

EPSOM COLLEGE:

ROYAL MEDICAL FOUNDATION.

To the Editor of THE LANCET.

SIR,—Last Christmas I humbly approached your readers on a note of entreaty; this Christmas I approach them again on a note of gratitude, not unmixed with a hope of further favours to come. We have won the support of many additional annual subscribers but, like Oliver, I am still handing up my plate for more. A most gratifying response has come from the Panel Committees throughout the country; without any question of a *quid pro quo* they have just done what they could, and certainly one boy owed his success in the election last June to their activities. We are deeply indebted also to our many honorary local secretaries, some of whom have sent us most substantial returns, and to the great medical institutions—to the British Medical Association and its journal, to THE LANCET, and to the Medical Insurance Agency. So sedulously did the Pathological Society, under the leadership of Profs. Dean and Boycott, canvass new subscribers that they secured at the first attempt a high place on the list of successful candidates for the son of a recently deceased pathologist. The increased subscription list has enabled us to do many things a little better, and to give materially greater advantages to our 50 foundation scholars. In the school department substantial improvements in the salaries of some of our masters have been made, a very important step, for good teaching is a basic requirement.

In the matter of legacies and benefactions we have been very fortunate too; it is on these that we depend almost entirely for the immediate provision of the more costly improvements that we effect. The rebuilt chapel—a war memorial mainly provided by old Epsomians—was dedicated last February; a well-known old Epsomian has beautified it with a gift of handsome silver-plated candlesticks, vases, and an alms-dish, and has also been instrumental in securing a contribution of £1000, which by his wish is being spent on Gothic oak panelling for the chapel. Four generous donors contributed a total sum of £1300, which has permitted a complete transformation of the library and a good equipment of new books. We have promises of the bequest of parts of two valuable libraries, but let me hasten to say that we welcome suitable books from the living as well as from the dead. If each medical man were to give one well-bound book, what a library we should have!

Carefully husbanded legacies have enabled us to lay the foundation-stone of a new chemistry block by the hand of our President, Lord Rosebery, and we intend to open it next midsummer on Founder's Day; this is costing rather more than £10,000. At the same time we are taking in hand the concentration of a scattered, wasteful, and nearly worn out heating installation at a cost of some £5000, and we can see our way also to much-needed additions to the accommodation for washing and drying for the boys in the lower school—another £2000 or more. There we reach the bottom of our pocket until kind friends of the College can give or influence the giving of legacies or benefactions for other objects of which I venture to name a few.

The provision of a new infirmary would be a priceless boon to the school. The present infirmary is not constructed according to the requirements of modern medicine and nursing, and is uneconomical to run. Our medical officer has plans for a model school infirmary which would cost from £15,000 to £20,000. The vacated infirmary would give accommodation to 45 more boys from our waiting-list which now totals nearly 500, and this addition to the total numbers would make the school a much more economical unit in many directions. What a chance for a wealthy patient as a thank-offering for life or limb! and for the Council to inscribe his name on it in perpetuity! More houses for married masters are a standing need, as also is an entrance lodge adjoining the College quadrangle. Some sportsman may be tempted to build a sports pavilion or to undertake the much-needed levelling of the lower school playing fields.

But in dangling these grandiose proposals before the eyes of potential benefactors we must not lose sight of our humble daily needs, whereby we educate and maintain our foundation scholars free of cost and distribute also many pensions; if funds were available we should like to increase these pensions, owing to the present high cost of living. One guinea annually, or a single donation of ten guineas, makes a governor and gives ten votes at each election in June of foundationers and pensioners, and each additional guinea gives ten votes more. We already relieve much distress in the profession; will you help us to relieve much more?

Subscriptions and donations may be sent to the Secretary, Epsom College Office, 49, Bedford-square, London, W.C. 1, who will be glad to give any information and welcomes personal visits at any time.

I am, Sir, yours faithfully,

RAYMOND CRAWFURD,

Chairman of the Council of Epsom College.

December, 1925.

TELLING THE TRUTH.

To the Editor of THE LANCET.

SIR,—In his letter of Nov. 28th on "Telling the Truth," "Croix Rouge" fails to distinguish between a *broad* and a *pure* mental reservation. He is also mistaken in the matter of Jesuit teaching. According to all moralists a lie, falsehood, or untruth is the act of *speaking against one's mind*. To borrow from a friend, saying: "I will pay you back," but adding in your mind "if I have any money," is to use words in a limited meaning without giving any outward clue to the limitation. This the Jesuits do not call diplomacy, but pure mental reservation, and that, to quote Father Joseph Rickaby, S.J. "is in nothing different from a lie, and is wrong as a lie is always wrong."[1] By that definition the dealer in antique furniture who says, "I guarantee that this is old," laying his hand on the genuine portion of a faked chair, is merely a skilled liar.

A *broad* mental reservation is different. Here the spoken words correspond to the thought in the mind —*secrets apart*—and therefore no lie is told. The reader may ask how it can be anything but *speech against the mind* when the mind thinks *yes* and the tongue says *no*. The answer is that in those cases where broad reservation is permissible the thought in the mind is "secrets apart—no," and that the word spoken is not to be taken as the whole locution.

> "The word is an *annotated text; nay*, in the body of the page, with *secrets apart* inscribed in the margin. The adequate utterance is the whole page, text and gloss together; that speech answers to the thought in the speaker's mind; therefore it is no lie. The essential requisite is that the gloss, *secrets apart*, be not written in the speaker's private mind, but be outwardly and publicly manifest in the matter spoken of, which must be one that clearly admits of secrets, and in the circumstances of the speaker, who is driven into a corner, and obliged to answer something, and yet cannot by any prudent man be expected to answer out of the fullness of all the knowledge that he may possibly possess."[2]

The next point to seize is that—

> "broad mental reservation is permissible only as a last resort, when no other means are available for the preservation of some secret which one has a duty to others, or grave reason of one's own, to keep."

What, then, are those secrets? The Jesuits teach that there are four kinds of secrets. *Natural* secrets are all a man's own private history, and all that he learns by observation of the similar private history of his neighbour. Next come secrets of *promise*, as when a man has found out something about his neighbour and the neighbour gets him to promise not to publish it. These two kinds of secrets must be revealed on the demand of an authority having the right of inquiry into matters touching on the secret. In another category is the secret of *trust*, confided to a lawyer or to a physician in the practice of his profession. The secret of trust is privileged. It is to be defended by silence, and where that be ineffective by broad reservation. For that reason I would not hesitate to tell "the pretty," or, may I add, the plain "wife of a faithless husband" that he had become infected through drinking out of a glass. Indeed, if Venus followed Bacchus the statement would be an excellent example of broad reservation. Last are the *secrets of confession*, which are absolutely inviolable, and in the Jesuit Church at Farm-street is the statue of a man who was martyred in this cause. The Jesuit died under torture; the seal of confession was unbroken.—I am, Sir, yours faithfully,

HALLIDAY SUTHERLAND.

Wimpole-street, W., Nov. 30th, 1925.

To the Editor of THE LANCET.

SIR,—The Psalmist said in his haste, "All men are liars." "Croix Rouge," in your issue of Nov. 28th, deliberately admits the truth of the statement. There appear to be exceptions, but the statement is, in this day, so nearly true that I would not trouble to controvert it. He, however, unlike the Psalmist, seems to regard this state of affairs as justifiable. There I emphatically disagree with him. To quote and translate a passage from Homer, "He is hateful to me as the Gates of Hades who conceals one thing in his mind and says another."

Every discreet man will, of course, very frequently conceal what is in his mind, but he need not, and should not, say another thing with intent to deceive. A lie is a false statement deliberately made with intent to deceive the hearer. Polite, or "white" lies as they are called, are merely conventional methods of veiling our actual feelings which often ought to be concealed. Lies told from motives of self-interest are in a totally different category and are sometimes even criminal. There is, no doubt, something to be said in favour of the kind of lies to which "Croix Rouge" seems especially to refer as being permissible. Let us take an example. A young woman consults a doctor about a tumour in her breast which he finds to be a cancer. To tell her that it is a cancer will do no good and will probably do considerable harm. He should, therefore, not tell her the nature of it if he can avoid it, but should, for his own protection, be provided with evidence to prove that he has made a diagnosis of cancer. Unfortunately, the patient, ignoring the fact that in these cases "ignorance is bliss," may insist on a definite answer to the question whether it is or is not a cancer. According to "Croix Rouge" he should say it is not a cancer. He then has to advise complete removal, and will have to tell more lies to try to persuade the patient. In order to succeed he may think it advisable to tell the truth to responsible relatives. He is in either case exposed to grave disaster. The patient, on the strength of his positive assurance, may absolutely refuse operation, and if he weakly yields he will later on be threatened with an action for damages for negligently causing the patient to lose the chance of cure. If he bravely admits that he has lied, or if the truth confidentially communicated to others has leaked out (as often happens), his patient, in a condition of mixed fury and despair, will probably tell him that as he has lied to her she can never trust him again and will change her medical adviser. He will then recognise that though the "bread of deceit is pleasant to a man it is afterwards as gravel in his mouth." It must also be remembered that although lies are sometimes undetected, the most skilful liar will soon have some of his lies exposed; and what value can be attached to the statements of a man when we know that he will lie whenever he thinks it expedient to do so. In another connexion, what scientific value can be attached to the results of the researches of the ablest man if he is known to be a liar? It is a matter of good taste to say of the dead "nil nisi bonum," but it is a matter of honour and duty to say to the living "nil nisi verum."

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[1] Moral Philosophy, 1918, p. 233.

[2] Loc. cit., p. 234.

I am, Sir, yours faithfully,
Nov. 30th, 1925. HUGH WOODS.

To the Editor of THE LANCET.

SIR,—*Aliquando bonus dormitat Homerus.* Your sub-editor—the editor himself is unthinkable—must have been acting Homer to pass the poison gas carried by "Croix Rouge." There are in every large profession blacklegs and outsiders whose morality and methods are beneath contempt.

I am, Sir, yours faithfully,
Dec. 7th, 1925. VERITAS.

RHEUMATISM: WANTED, A NEW NOMENCLATURE.

To the Editor of THE LANCET.

SIR,—Your issue of Dec. 5th contains a report of the joint meeting of the International Society of Medical Hydrology and the Section of Balneology held at the Royal Society of Medicine on Nov. 27th. The lay press reported this meeting very fully. A survey of these latter reports and conversation with many intelligent laymen brings out the interesting fact that what chiefly interested the public in this discussion was the impression that rheumatism not only cripples thousands of people in every European country, but is further responsible for an enormous death-rate owing to the frequency with which it causes heart disease.

The distinction between rheumatic fever, a disease of children which never causes chronic joint changes and frequently provokes serious cardiac lesions, and rheumatoid arthritis, a disease of adults which tends to cause chronic joint changes and very seldom affects the heart at all, would appear to be too fundamental and established to require emphasis to-day. The importance of each of these diseases is so great that confusion concerning them is deplorable, but it is no exaggeration to say that a discussion of one or the other, whether at a meeting or in the columns of a medical journal, never takes place without the two being jumbled together in almost hopeless disorder. Is not this essentially a case where chairmen and editors should exercise their powers of veto in the hope of making discussion fruitful?

If the unanimity of our text-books and our teaching is not sufficient to make the matter clear, it becomes open to question whether we should not adopt a new nomenclature. "Rheumatic fever" and "acute rheumatism" are unquestionably the terms responsible for the confusion. It is perhaps time that a new name were adopted for this disease, preferably one which would incorporate a conception of its serious cardiac effects and cease to emphasise its quite trivial articular manifestations.

I am, Sir, yours faithfully,
London, Dec. 5th, 1925. T. IZOD BENNETT.

"A DISCLAIMER."

To the Editor of THE LANCET.

SIR,—Is there any real necessity for the publication of disclaimers such as that which appears in THE LANCET of Dec. 5th, p. 1198? Is every medical man who delivers a public lecture to be prohibited from allowing his name to be announced to his prospective audience? Surely this is a *reductio ad absurdum.* I write this letter for information, not for advertisement!—I am, Sir, yours faithfully,

LEONARD F. BROWNE.
Harley-street, W., Dec. 7th, 1925.

LANCASHIRE AND THE SPAHLINGER TREATMENT.

To the Editor of THE LANCET.

SIR,—On p. 1203 of your issue of Dec. 5th one reads the following: "Dr. Thomas Watts, M.P. (Withington), said that he and his colleagues who went to Geneva traced a definite 80 per cent. absolute recoveries, which was very different from 14 per 1000 in this country. . ." One would like to know the basis of his statement that only 1·4 per cent. of recoveries are to be expected from sanatorium treatment. It is obviously a ludicrous inaccuracy. Is it, I wonder, the printer's or the speaker's error?

I am, Sir, yours faithfully,
F. G. CHANDLER, M.D., F.R.C.P.
Park-square West, N.W., Dec. 5th, 1925.

⁂ Our report was published as it was received and the figures given by the speaker will be generally considered to require explanation.—ED. L.

THE ROYAL COLLEGE OF SURGEONS OF ENGLAND AND ITS MEMBERS.

To the Editor of THE LANCET.

SIR,—The request on the part of the Members of the College (Conjoint Diplomates) for an improved status by the grant of a voice in the affairs of their College is only natural. The Member comes in contact with disease in its early stages. Upon his outlook, discrimination, and powers of diagnosis depends the quantum of benefit received by the patient. Early diagnosis is of priceless benefit to the public. It can be truthfully said that to be a good family doctor is as difficult, if not more so, than to be a specialist. Is the benefit of his skill likely to be developed by men who have an inferior status? An improved status would stimulate the Member to greater efforts for the common weal. The gulf between the general practitioner and specialist would be lessened, which, I submit, would be in the interest of common humanity.—I am, Sir, yours faithfully,

F. W. COLLINGWOOD.
Royal Colonial Institute, Northumberland-avenue,
London, Dec. 8th, 1925.

DIABETES AND OPERATION.

To the Editor of THE LANCET.

SIR,—In his article on Diabetes and Operation, which appears in THE LANCET of Dec. 5th, Dr. O. Leyton draws attention to the fact that a general anæsthetic usually makes the diabetic condition much more grave and states that, in his experience, it is extremely rare for a general anæsthetic, other perhaps than nitrous oxide and oxygen, not to lead to a definite deterioration of the carbohydrate metabolism in cases of diabetes mellitus. We have investigated this question and find that if appropriate treatment be carried out before, during, and after operation, as described by us in THE LANCET (1924, ii., 647), no such deterioration will occur. In only one of our cases was there evidence of the diabetic condition becoming more grave, although ether was invariably used as an anæsthetic. The other cases are now free from glycosuria. Since this date we have advised on the question of operation in many other diabetics, with results that have been uniformly good.

We are, Sir, yours faithfully,
H. S. PEMBERTON.
Liverpool, Dec. 8th, 1925. L. CUNNINGHAM.

HOSPITAL CONTRIBUTIONS FROM SHEFFIELD CITY COUNCIL.—Under the Public Health Act, 1925, which came into operation two months ago, the Sheffield City Council was empowered to make contributions to the Hospitals "Penny-in-the-Pound" scheme. It has now decided to give one-third of the amount contributed by 5000 of its employees, and it is believed that the total will reach about £1500 per annum.

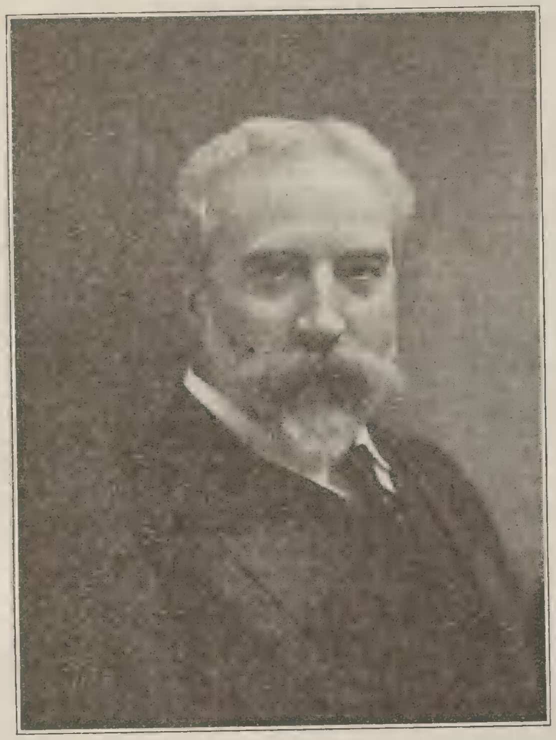
Obituary.

SIR JOHN MACALISTER, F.S.A.,

LATE SECRETARY AND LIBRARIAN OF THE ROYAL SOCIETY OF MEDICINE.

WE have announced already the death of Sir John MacAlister, which occurred on Tuesday, Dec. 1st, at his residence in Finchley-road, in the 70th year of his age. The sad event could not have been an unexpected one for any of his numerous friends and acquaintances, while the medical profession at large were prepared for this sequel to his recent resignation, owing to seriously failing health, of his official position at the Royal Society of Medicine.

John Young Walker MacAlister was born in 1856 of an ancient Scottish family. He was educated at the High School, Liverpool, and later was for three years a medical student in the University of Edinburgh. Shortly, however, before completing the curriculum his health broke down, and he was advised to choose a profession of a less exacting physical nature, with the result that he became sub-librarian of the Liverpool Library. It soon became clear that he had both the love of order and the love of books necessary to be a valuable librarian, and in 1880 he was appointed chief librarian to the Leeds Library, where he had a full opportunity for displaying his exceptional abilities; for new buildings were in the course of erection at Leeds, and MacAlister's designs were followed in regard to a considerable part of the internal structure. There was already at Leeds a large collection of books, and these were catalogued in accordance with the new librarian's scheme of classification, which was afterwards adopted under his management in the library of the Yorkshire College, the constituent college of the Victoria University, which formed the origin of the University of Leeds. With this record it is not surprising that in 1887 the National Liberal Club in London should have nominated him as the librarian of the Gladstone Library of the Club, but his tenure of the position was a brief one. It gave him the opportunity of personally meeting Gladstone, and hearing from the great statesman's own mouth the ideas on library arrangement which personally appealed to him; but within a few months the post of librarian and secretary at the Royal Medical and Chirurgical Society fell vacant, and MacAlister, throughout his life deeply interested in all medical activities, became a successful applicant for the vacancy.



SIR JOHN MACALISTER.

From this time forward MacAlister's life was lived in association with that society and with the great body, the Royal Society of Medicine, into which it later developed, and in the Transactions of the Royal Society of Medicine there will be found from his own pen a modest but clear account of the prominent phases in a career of eager and successful activity. The Royal Medical and Chirurgical Society had its home at 53, Berners-street, when MacAlister became its executive officer, the rent was £14 a year, the lease had 13 years to run, and no preparation had been made either to meet the fifty-fold rent which with perfect reason would be demanded shortly, while there had been no sinking fund provided for dilapidations. The number of Fellows was about 800, and, to quote MacAlister's own words, "the subscriptions barely made ends meet, and a new chimney-pot caused a deficit in the annual accounts." When, after looking closely into the situation, he spoke of it to prominent members of the Society, no one seemed very interested; one of those to whom he went for advice suggested doubling the subscriptions, while another said that if that was done half the members would resign, and the new official was left more or less to find a way to salvation for persons apparently resigned to impending disruption. Many may remember what happened. MacAlister conceived the idea that the Society might become the owners of premises of such a character that portions could be let off, leaving substantial premises for the Society at no great annual cost. A suitable house, however, had to be obtained, while a capital sum would be necessary before it would be possible to enter into possession of such a building. MacAlister found a large house in Hanover-square, which had stood empty for some years, and the sum of money demanded for it seemed to him moderate. He immediately placed the whole scheme before Sir Andrew Clark, the President of the Society at the time, and with characteristic energy Clark, having approved the idea generally, called for details, asked pertinent questions, promised a decision at a meeting to be held early the following morning, discussed the plans at the meeting, and headed a proposed debenture list with a cheque for £10,000. The prosperous growth of the Royal Medical and Chirurgical Society, which immediately followed on the move to 20, Hanover-square, would have probably filled to satisfaction the days of most secretaries. But actually before the house was rehabilitated so as to accommodate the lodgers, whose pleasant duty it would be to pay the rent, MacAlister, with Sir Andrew Clark as his backer, produced a scheme for the amalgamation of the medical societies of the metropolis, whereby all the strength and solidarity of the combination would be ensured for every body which joined, while economy would be achieved in personnel, and overlapping activities could be avoided. Whether the medical profession or the various metropolitan societies were in these early days prepared for the scheme is doubtful, but, anyhow, it fell into abeyance with the premature death of Sir Andrew Clark. The delay, however, was not long, for in 1905 MacAlister submitted to Sir Richard Douglas Powell, then President of the Royal Medical and Chirurgical Society, a revised scheme for amalgamation which had been ventilated 12 years previously. This scheme received the approval of a large group of leaders of the medical profession within and without the metropolis, but the interests involved were numerous and not always identical, and the negotiations extended over two years or more. During this time, in the first place, membership of the Royal Medical and Chirurgical Society gained in numbers until it became obvious that a new house would have to be obtained, while, in the second place, the idea of fusion had become familiarised to many of the bodies concerned by the fact that a considerable group of them were already the sub-tenants of the Royal Medical and Chirurgical Society. MacAlister was the mainspring of all the business, he initiated the negotiations, carried them on, and suggested the conditions by which they should be determined, and when a suitable site for a Royal Society of Medicine was found at the corner of Wimpole-street and Henrietta-street he performed financial miracles in getting money with which to buy and finding arguments for securing good terms.

The following tribute from Sir StClair Thomson, the President of the Royal Society of Medicine, continues the story of MacAlister's connexion with the Society, showing what an astonishing change in the academic life of the medical profession in the metropolis has been effected through MacAlister's organising talents. Sir StClair Thomson writes :—

"It was chiefly through his organising talents that the Medical and Chirurgical Society moved to a larger house in Hanover-square, and there amalgamated itself with 18 other distinct medical societies of London into the now flourishing Royal Society of Medicine. MacAlister's indomitable energy was the chief factor in erecting the handsome home for this great amalgamation at the corner of Wimpole-street and Henrietta-street. He who had commenced as librarian to a society of 745 Fellows, with an income of about £1600 per annum, lived long enough to be secretary of a society of 4000 Fellows, with an income of £20,000 a year, and possessing, among other valuables, the largest medical library in the British Empire.

"This fusion of 18 separate and independent societies was really a Herculean work, if it is remembered how many conflicting interests and jealousies had to be overcome. Many efforts at the task had failed since the foundation of the original Medical and Chirurgical Society in 1805. It was nearly successful in the time of Sir Andrew Clark, but the untimely death of that great physician arrested progress until it was finally accomplished in the year 1907, when Sir William Church, ex-President of the Royal College of Physicians, became the first President of the Royal Society of Medicine. This great achievement was doubtless accomplished because MacAlister was a man with imagination, was absolutely devoid of selfishness, and was single-hearted in his devotion to a great idea. Fortunately he was a man endowed with a serene and equable temperament which allowed his Celtic imagination to be controlled by the more rational spirit of his Southern friends. If any project of his was occasionally turned down as visionary or impracticable, he was neither resentful nor cross about it.

"His handsome presence will not easily be forgotten. He was twice threatened with tubercle. He suffered from other troubles, for the relief of which he was ever grateful to his old friend, Sir Arbuthnot Lane. But he never looked the invalid. Broad-shouldered and erect, with his handsome head of hair and curling beard, with the refined straight nose and the high cheekbones of the Celt, his one grey and his other blue eye added an increased charm, while his clear diction and low, musical voice had an attractive and caressing effect. In his prime there was something about him suggestive of the Viking type, with which much of the Highland strain on the coasts of Scotland is mingled. This same Celtic strain gave him a love of hospitality, a sociability, a courtesy, a facility of approach, and a pliability which is sometimes wanting in the Lowlander. Possibly it also accounted for a certain respect for the ceremonial and bravura of public affairs, and for the simplicity and frugality of his private life. He was known to and beloved by successive generations of medical men. There is hardly a consultant or specialist in London to whom he was not a friend and a helper. Outside the profession he was ready to join in any undertaking of public interest, and particularly those concerned with books and libraries. His catholic tastes were shown by his membership of the Athenæum, Garrick, and Bath Clubs, and his life-membership of the Savage Club. He was, in Dr. Johnson's true meaning of the word, 'a very clubbable man.'

"The Council intend to hang his portrait in the entrance hall. Fellows will recognise in this fine portrait that the artist has not omitted to indicate, by the surroundings, his love of books and libraries, and his great share in the erection of the Society's house. The cigar in his hand indicates his devotion to 'my lady Nicotine' and no sweeter incense could be burnt before his picture than the tobacco smoke which will in future curl up round it during the tea hour. It is one of the curious, though not uncommon, coincidences of our great country that MacAlister and the last President to be associated with him both came from small neighbouring villages on the shores of Loch Fyne, and yet it was not in Argyllshire, but in Berners-street that they met for the first time.

"When I saw him shortly before he died he told me he had not smoked for two days, and then, as Mistress Quickly said, 'I knew there was but one way.' He was able still to take great interest in the most recent doings of the Society, and gave voice to his well-known chuckle when I told him that the annual dinner had been so managed that it had left us with a profit instead of the usual deficit. He had neither distress nor pain, for the devoted attentions of his family, his friends, and his faithful attendant, Dr. Moreland McCrea, had smoothed the last stormy passage. His only complaint and his last words were: 'I am only tired—very tired—always tired.'

"His best and most enduring memorial will be the house of the Society he served so long and faithfully. As was said of Sir Christopher Wren : *Si monumentum requiris, circumspice.* If those interested care to look up 'Who's Who' they will see that he has quizzingly recorded that his chief recreation was 'sleeping'! After life's fitful fever our friend sleeps well."

Outside the Royal Society of Medicine MacAlister was well known as a librarian. He was instrumental in founding the library which is now the organ of the Bibliographical Society. Nearly 40 years ago he became honorary secretary of the Library Association, and he played a prominent part in securing the passage of the Act which in 1892 regularised the conduct of public libraries. During the war MacAlister acted as secretary of one of the War Office committees, and in that capacity organised a service to afford surgical and medical assistance in the casualties of the metropolis arising out of air raids. In 1920 he was knighted, and his numerous friends testified their pleasure at the State recognition of his services by making him the guest at a very large and successful banquet, and presenting him with a testimonial.

Sir John MacAlister married Elizabeth, daughter of George Batley, of Blackhall, Edinburgh, by whom he had two sons. To them and to Lady MacAlister we tender our sympathy in the loss which they have sustained.

RICHARD JOCELYN SWAN, M.R.C.S. ENG., L.S.A., L.M. DUB.

THE death took place at Wallington on Dec. 7th of Dr. Richard Jocelyn Swan at the age of 76 years. He was the second son of the late Dr. John Wright Swan and was born in 1849 at Ballyragget, Co. Kilkenny. He studied medicine at Steevens' Hospital, Dublin, where he was awarded the Cusack Surgical Clinical Prize in 1868. After qualification at the Royal College of Surgeons of England, he was appointed assistant obstetric physician to Steevens' Hospital, relinquishing this post to take up general practice first in Northleach, Gloucestershire, later in Lincolnshire, and from 1885 in South London. For upwards of 25 years Dr. Jocelyn Swan acted as consulting surgeon to the tramways staff of the London County Council. He took a keen interest in the affairs of the Irish Medical Schools and Graduates Association, of which he was treasurer for 20 years and president in 1913. He also took an active interest in the Volunteer Army, both in the Lincolnshire Regiment and in the 1st Surrey Rifles, and during the Great War was on the active staff of the Belmont Hospital, Sutton.

Dr. Jocelyn Swan leaves a widow, the daughter of Dr. Robert Harper, of Holbeach, Lincolnshire, by whom he had two sons and one daughter.

THE LATE SIR ROBERT CHARLES BROWN.

THE career of Sir Robert Charles Brown, of Preston, was briefly set out in THE LANCET of Nov. 28th (p. 1142). Dr. F. W. Collinson, his colleague on the staff of the Preston Royal Infirmary, writes to point out Sir Charles Brown's life-long services to that institution. He assisted in the collection of money for the erection of the original building. He was on the staff from the time the infirmary was opened in 1870 to his death, first as house-surgeon, then as honorary physician, and, for a number of years, as consulting physician. After inspecting the best in use elsewhere, he built, entirely at his own expense, an up-to-date operating theatre with all the necessary appurtenances. He provided isolation wards, conservatories, and many other things for the comfort and welfare of the patients. When X rays were first introduced, he defrayed the cost of an outfit, which was the best of its kind at the time. In all, his gifts to the infirmary amounted to more than £10,000. He was, adds Dr. Collinson, a man of simple tastes with no desire to spend money upon himself, and frequently denying himself that he might have more to bestow on others. In his later years he often spoke of having "found the value of money now that he was giving it away."

Parliamentary Intelligence.

HOUSE OF COMMONS.

WEDNESDAY, DEC. 2ND.

Pharmacists in the Army.

Mr. ALFRED WILLIAMS asked the Secretary of State for War whether he could state the number of pharmacists who had specially enlisted as such during the years 1922, 1923, and 1924; and what rank was accorded to pharmacists on enlistment.—Sir L. WORTHINGTON-EVANS replied: No pharmacists were enlisted in the regular army during the years in question, but five were enlisted in the Royal Army Medical Corps (Supplementary Reserve) during 1924. All pharmacists are enlisted in the rank of private.

Inoculation of Soldiers.

Mr. COMPTON asked the Secretary of State for War on what grounds it was made compulsory for recruits on enlistment to be vaccinated on one arm and inoculated on the other at the same time and for a second inoculation to be performed within ten days.—Sir L. WORTHINGTON-EVANS replied: The hon. Member is under a misapprehension. Soldiers are not inoculated until they are about to proceed on foreign service.

Vaccine Lymph.

Mr. GROVES asked the Minister of Health whether oil of cloves was used in the preparation of vaccine lymph.—Mr. N. CHAMBERLAIN replied: The answer is in the affirmative.

THURSDAY, DEC. 3RD.

Closing of Pensions Hospitals.

Colonel ENGLAND asked the Minister of Pensions how many Ministry of Pensions hospitals had been closed within the last 12 months; and how many ex-Service men requiring treatment were awaiting admission to the existing hospitals at the present time.—Major G. C. TRYON replied: Seven hospitals have been closed within the past 12 months. The average number of men awaiting admission to hospital is slightly over 400 at any one time. This compares with an average weekly number of 480 admissions to and 470 discharges from the hospitals. There is an average floating balance of 460 beds always available.

Orpington Hospital.

Captain BOWYER asked the Minister of Pensions whether, in view of complaints regarding the treatment of neurasthenic ex-Service men at Orpington and at other hospitals, he would definitely state that no economy had been, was being, or would be, practised at the expense of these ex-Service men.—Major G. C. TRYON replied: I can unhesitatingly give my hon. and gallant friend the most complete assurance to this effect.

Pensions Ministry Hospitals.

Mr. DENNISON asked the Minister of Pensions how many institutions there were under the control of the Ministry for the treatment of pensioners and where they were situated; and what was the charge made against pensioners' allowances at the institutions under his control for the treatment of the mentally afflicted.—Major G. C. TRYON replied: There are 23 institutions under the entire control of the Ministry, and three where that control is partial only. With regard to the latter part of the question, the charge, if any, made against a pension or allowance during treatment, either in a public institution or one controlled by the Ministry, is determined by the provisions of Article 6 of the Royal Warrant and of the Lunacy Acts. In those cases where any charge is made the maximum is 37*s.* 6*d.* a week. The following are the institutions referred to: Bellahouston, Glasgow; Craigleith, Edinburgh; Edenhall, Musselburgh; Castle Leazes, Newcastle-on-Tyne; Becketts Park, Leeds; Kirkburton, Huddersfield; Grangethorpe, Manchester; Mossley Hill, Liverpool; Maghull, Liverpool; Chepstow, Wales; Rookwood, Cardiff; Watson Home, Birmingham; Harrowby, Grantham; Saltash, Cornwall; Coombe Park, Bath; Fernbank, Roehampton; Latchmere House, Richmond; Ewell, Surrey; Orpington, Kent; Rotherfield Court, Henley-on-Thames; The Spring, Hanwell; Leopardstown Park, Dublin; Blackrock, Dublin; and (under partial control) Highbury, Birmingham; Roehampton; and Sidcup.

Pensioners and Treatment.

Mr. GROVES asked the Minister of Pensions what was the number of pensioners in receipt of treatment with allowances on Nov. 1st, 1923, Nov. 1st, 1924, and Nov. 1st 1925, respectively; and what was the number of men in receipt of treatment and training on the same dates and the number of pensioners who were on home treatment without allowances.—Major G. C. TRYON replied: The number of pensioners in receipt of medical treatment with allowances was: 33,019 on Nov. 1st, 1923; 30,519 on Nov. 1st, 1924; and 26,148 on Nov. 1st of the present year. The number of men in receipt of treatment and training on the same date was: 3064 in 1923 and 1313 in 1924. Owing to the diminished need for further vocational training and the consequent closure of the centres during 1924 and the present year, only 12 men who are completing a course of instruction still remain in the centres. I regret that I have no information as to the last part of the question.

Bursitis as an Industrial Disease.

Mr. TINKER asked the Home Secretary if a decision had been reached in regard to the inclusion of bursitis in the schedule of industrial diseases for miner's beat knee.—Sir WILLIAM JOYNSON-HICKS replied: Proposals for amending the present descriptions in the schedule of miner's beat knee and miner's beat elbow were referred by me in July last to the Mining Association and Miners' Federation for observations, but neither body has so far furnished me with its views on the subject and at the present moment when they are so much occupied with other matters I should be reluctant to press for a reply.

Food Preservative Regulations.

Mr. BARNES asked the Prime Minister whether, in view of the importance of the issues which would be involved if the Public Health (Preservatives, &c., in Food) Regulations, which were issued on 4th August, 1925, were put into operation, he would give time to a discussion of them in this House at an early date.—Mr. BALDWIN replied: I regret that owing to the pressure of business it is impossible to allow time for such discussion this session.

Welfare of Children.

Mr. DAY asked the Minister of Health if he was aware that no provision existed for the medical welfare of children over 2 years of age and under 5 years; and, in view of the danger of children between these ages being exposed to the risk of preventable diseases, would he cause arrangements to be made in order to close the present gap.—Mr. NEVILLE CHAMBERLAIN replied: No, Sir. The arrangements made under the Maternity and Child Welfare Act do not exclude any category of children below school age, and my department loses no opportunity of impressing upon the local authorities in charge of maternity and child welfare schemes the importance of maintaining a continuous supervision over children up to the age at which they attend school.

Unhealthy Housing Areas.

Mr. GROTRIAN asked the Minister of Health whether he was aware that local authorities were being deterred from representing areas as unhealthy owing to the unfairness of paying nothing for buildings which in themselves were unexceptionable but which happened to be within an unhealthy area; and whether he would consider the repeal of Section 46 of the Housing Act, 1925, and the putting into force of the recommendations of the report of the Unhealthy

Areas Committee, 1921.—Mr. Neville Chamberlain replied : I cannot accept the suggestion made in the first part of the question that no compensation is paid for buildings which in themselves are unexceptionable. Payment on the basis of site value is prescribed by the Act for buildings which are included in a scheme on account of their sanitary condition or because the premises are dangerous or prejudicial to health. I am closely watching the operation of this section, but I am not in a position to make any statement as to future legislation at the present time.

Powers of the General Medical Council.

Colonel Woodcock asked the Minister of Health whether his attention had been called to the recent action of the General Medical Council in striking off the Medical Register one of its members for what was described as infamous conduct in a professional respect ; whether he was aware that the General Medical Council was now composed wholly of medical members ; and whether, seeing that the statute did not require that the General Medical Council should be composed exclusively of medical men, he would in nominating members of the Council take steps to add members representing the public.—Mr. Neville Chamberlain replied : The answer to the first and second questions is in the affirmative, except that the practitioner to whom I understand my hon. and gallant friend to refer was not a member of the General Medical Council. The answer to the third question is that members of the Council, other than those representing certain bodies specified in the Acts, are nominated by His Majesty with the advice of his Privy Council. The Minister departmentally responsible is the Lord President of the Council.

Colonel Woodcock : Will he set up a committee to investigate the procedure of the Council and its relation to modern usage and methods.—Mr. Chamberlain : I am not the Minister departmentally responsible.

The General Medical Council and Dr. Lloyd.

Sir Robert Gower asked the Minister of Health whether his attention had been called to the action of the General Medical Council in removing the name of Dr. William Lloyd from the Register of medical practitioners for having given treatment to certain patients ; and whether he would consider the necessity of introducing legislation restricting the power of the General Medical Council to strike off the Medical Register the names of practitioners who had not been proved to be guilty of actual misconduct and giving him power to replace on such Register the name of any person which, in his opinion, had been capriciously or unreasonably removed. —Mr. Neville Chamberlain replied : I have consulted my noble friend the Lord President of the Council on this matter as responsibility rests with him and not with me. The name of Dr. William Lloyd was not, as I understand it, removed from the Medical Register by the General Medical Council for having given treatment to certain patients, but for having sought to obtain patients and promote his own professional advantage by unprofessional methods. I am furnishing my hon. friend with a copy of the charge on which Dr. Lloyd was summoned to appear before the Council. In answer to the second and third parts of the question I am advised that the General Medical Council have statutory power to direct the erasure from the Medical Register of the name of a practitioner who has been convicted in England or Ireland of any felony or misdemeanour or in Scotland of any crime or offence, or has, after due inquiry by the Council, been judged to have been guilty of infamous conduct in a professional respect. I am further advised that there is no evidence that the Council have directed the erasure of the name of any practitioner without his having been thus convicted or thus judged after due inquiry to have been guilty of infamous conduct in a professional respect as defined by Lord Justice Lopes, Lord Justice Davey, and Lord Esher. In regard to restoration, it has been the practice of the Council to replace names on the Medical Register when they are satisfied that such a course will not be prejudicial to the public interest. My noble friend has no reason to believe that the Council have acted capriciously or unreasonably, and as at present advised does not consider that the introduction of further legislation is necessary, there being already power under the relevant Acts for the Privy Council to issue its directions to make good any defaults in practice of the General Medical Council.

Committees and Panel Practitioners.

Lieut.-Commander Kenworthy asked the Minister of Health whether he would state the total number of committees of inquiry convened, since these committees had power to award costs, for the purpose of inquiring into a practitioner's fitness to remain on the panel ; the number of cases in which the practitioner was unsuccessful in rebutting the suggestion that he was unfit to remain on the panel ; and the amount of costs awarded to the practitioner in each case. —Mr. Neville Chamberlain replied : Since the Inquiry Committee referred to have had power to award costs, 34 inquiries have been held. In 12 cases the inquiry resulted in the practitioner being removed from the medical list, and in one case he was permitted to resign in lieu of removal. In five of these 13 cases no order was made as to costs. In 15 of the remaining cases the facts disclosed were held to justify requiring the practitioner to pay the costs or the imposition of other penalties. In three cases no order was made, and in three cases costs were awarded to the practitioners, the amounts being £35 3*s.* 4*d.*, £59 4*s.* 2*d.*, and £4 4*s.* respectively.

Poor-law Relief.

Mr. Neil Maclean asked the Minister of Health the number of people receiving poor relief in England and Wales at the end of June, August, and October, 1925.—Mr. Neville Chamberlain replied : Excluding lunatics in county and county borough asylums, casuals, and persons in receipt of domiciliary medical relief only, the number of persons in receipt of Poor-law relief in England and Wales on the last Saturday in June was 1,105,970, on the last Saturday in August, 1,200,599, and on the last Saturday in October, approximately 1,270,186.

Deaths from Tuberculosis Contracted on Active Service.

Mr. Pielou asked the Minister of Health the number of ex-Service men who had died during the last ten years from tuberculosis contracted while on active service.—Major G. C. Tryon replied : During the ten years up to Nov. 30th about 21,000 men pensioned for tuberculosis have, I regret to say, died from that disease.

FRIDAY, DEC. 4TH.

Beds in Military Hospitals.

Brigadier-General Charteris asked the Secretary of State for War the present number of equipped beds in military hospitals under the control of the War Office ; and the average daily number of patients in these hospitals during the current year.—Sir L. Worthington-Evans replied : The information is as follows : number of equipped beds at home and abroad on Oct. 31st, 1925, 6751. Average daily number occupied during the year ending Oct. 31st, 1925, 3567.

Brigadier-General Charteris asked the Secretary of State for Air the present number of equipped beds in hospitals under the Air Ministry ; and the average daily number of patients in these hospitals during the current year.—Sir S. Hoare replied : The answer to the first part of the question is 1586 ; to the second, 528. Of the 1586 equipped beds, 1139 are in hospitals in Iraq and Palestine which cater for the whole garrisons—i.e., Army as well as Air Force, and British as well as Indian troops, and, in Palestine, the British gendarmerie in addition. I may add that it is necessary to provide beds considerably in excess of the average occupation in order to be in a position to cope with epidemics, casualties, seasonal illnesses, and the special conditions under which the forces in the Middle East are serving, but their number is, and will continue to be, brought under constant review.

MONDAY, DEC. 7TH.

Medical Staff at Halton Hospital.

Sir Fredric Wise asked the Secretary of State for Air the number of boys at Halton College, and the number of tutors, doctors, &c.—Sir S. Hoare replied : The medical staff at Halton Hospital consists of 9 officers and 94 airmen, but their duties are not confined to providing medical attendance for the school, the hospital being a central one for the whole Air Force.

Neurasthenic Clinics.

Captain Waterhouse asked the Minister of Pensions what general instructions, if any, had been issued to officials with a view to cutting down the number of patients receiving treatment in neurasthenic clinics.—Lieut.-Colonel G. F. Stanley (Parliamentary Secretary of the Ministry of Pensions) replied : The general instructions in force are issued with the object of securing that all patients who require it receive appropriate and efficient treatment. The operation of the neurological clinics is under the general supervision of the deputy commissioner of medical services for neurological cases, who is a specialist, and is responsible for seeing that the treatment carried out at the various clinics is both necessary and satisfactory.

Cost of Poor-law Administration in 1924.

Mr. Rhys asked the Minister of Health the cost of Poor-law administration for 1924.—Mr. Neville Chamberlain replied : The amount expended in England and Wales during the financial year ended March 31st, 1924, on administrative charges in respect of the relief of the poor and purposes wholly connected therewith was £1,187,906.

TUESDAY, DEC. 8TH.

Beds in Naval Hospitals.

Brigadier-General CHARTERIS asked the First Lord of the Admiralty the present number of equipped beds in naval hospitals, and the average daily number of patients in these hospitals during the current year.—Mr. DAVIDSON (Parliamentary Secretary to the Admiralty) replied: The figures are as follows:—

R.N. Hospital—	Equipped beds.	Peace accommodation.
Haslar	1151	1151
Plymouth	756	860
Chatham	872	599
Portland	117	117
South Queensferry	100	100

Information as to the numbers of equipped beds in naval hospitals abroad is not available. The accommodation in these hospitals is as follows: Malta, 365; Bermuda, 78; Hong-Kong, 125; Cape, 48; Wei-Hai-Wei, 38. "Equipped beds" means actual beds and their fittings, including those kept in store, which may or may not be in excess of the amount of accommodation. The average daily numbers of patients in naval hospitals for the period Jan. 1st–Sept. 30th, 1925, were as follows. No later information is available: Haslar, 334; Plymouth, 375; Chatham, 377; Portland, 50; South Queensferry, 44; Malta, 188; Bermuda, 22; Hong-Kong, 54; Cape, 36; Wei-Hai-Wei, 11.

Small-pox at Middlesbrough.

Mr. GROVES asked the Minister of Health whether he was aware that the death from small-pox at Middlesbrough, referred to in the quarterly return of the Registrar-General, No. 306, was really due to some other disease; and whether he could give the age of the patient and state whether the patient had been vaccinated or not.—Sir KINGSLEY WOOD (Parliamentary Secretary of the Ministry of Health) replied: The only death from small-pox registered in Middlesbrough during the quarter ended June 30th, 1925, was in respect of a child aged 1 month. The cause of death given in the medical certificate was "broncho-pneumonia following small-pox," and, in accordance with the general rules, based upon international agreement, which are referred to in the reply given on August 4th last, the death was classified as being due to small-pox. The child had not been successfully vaccinated.

Appeal from the General Medical Council.

Colonel WOODCOCK asked the Prime Minister whether he was aware that a member of the medical profession who was struck off the list by the General Medical Council had no redress or appeal against such decision; and whether he was prepared to set up a committee to investigate the procedure of the Council in its relation to modern methods and usage of the medical profession regarding the Medical Act of 1858.—Major HENNESSY (Lord of the Treasury) replied: I am asked by the President of the Council to say that there is no appeal from the General Medical Council to another court, but a medical practitioner struck off the Register may, at any future session, bring up his case for revision, and his name may be, and often is, restored to the Register. In all inquiries the General Medical Council is assisted by a lawyer of great experience and ability. It has since its creation in 1858 performed the duties entrusted to it without serious criticism, and as at present advised my noble friend does not think that sufficient reason has been shown for setting up a committee of inquiry.

Colonel WOODCOCK: Is the hon. and gallant gentleman not aware that members of the Bar, solicitors, and members of all professions except the medical profession, have an independent court of appeal, and will he take steps to try to get one in this case?—Colonel SINCLAIR: Is it not a fact that practitioners struck off the roll have a right of appeal to the Privy Council, if they care to exercise it?—Major HENNESSY: I will see that Colonel Woodcock's observations are conveyed to my noble friend.

Dispensing in the Army.

Mr. HERBERT WILLIAMS asked the Secretary of State for War whether, in view of the fact that prescriptions containing dangerous drugs and poisons might be dispensed in the Royal Army Medical Corps by persons other than medical officers or pharmacists, he would give instructions that such prescriptions should in future only be dispensed by a medical officer or pharmacist, or under the direct supervision of a medical officer or pharmacist by whom the quantity of the dangerous drugs or poisons shall be checked.—Captain D. KING (Financial Secretary to the War Office) replied: All army dispensaries are under the direct supervision of a medical officer. The only persons, other than medical officers, who may make up prescriptions in these dispensaries are qualified army dispensers, and they may only make up prescriptions signed by a medical officer. I am not aware of any reason for considering that the present procedure is not satisfactory.

Medical News.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION.—A special fortnight's course in medicine, surgery, and the specialties will commence on Jan. 11th, 1926, at the Prince of Wales's General Hospital (N.E. London Post-Graduate College). On Jan. 4th the Bethlem Royal Hospital will start a series of lecture-demonstrations on Tuesdays and Thursdays at 11 A.M. on the various branches of psychological medicine, the course lasting for four weeks. On the same date the West End Hospital for Nervous Diseases will begin a month's course in neurology; lectures, including clinical demonstrations on selected cases, will be given daily at 5 P.M. The North-Eastern Fever Hospital will hold a three weeks, course in infectious fevers; this course will begin on Jan. 11th and will consist of a series of demonstrations in the diagnosis and treatment of the acute infectious diseases, at 11 A.M. on Wednesdays and Saturdays. A cardiology course will be in progress at the National Hospital for Diseases of the Heart from Jan. 11th to the 22nd. On the 18th the Queen's Hospital for Children will start a fortnight's course in diseases of children, which will include lectures, demonstrations, and operations. The first of a new series of lectures, arranged by the Fellowship of Medicine, will be given on Jan. 21st, when Dr. Herbert Spencer will lecture on Abdominal Palpations in Pregnancy. Other subjects of interest will be dealt with on subsequent Thursdays, the lectures beginning in each case at 5 P.M. A copy of each syllabus and of the general course programme will be forwarded on application to the Secretary of the Fellowship, 1, Wimpole-street, London, W.1.

TUBERCULOSIS SOCIETY.—A meeting of this society will be held to-day (Friday), at 8 P.M., at 1, Upper Montague-street, Russell-square, W.C., when Dr. Otto May will read a paper on Life Assurance and Tuberculosis.

WEST KENT MEDICO-CHIRURGICAL SOCIETY.—A meeting of this society will be held to-day (Friday) at the Miller General Hospital, Greenwich, S.E., at 8.45 P.M., the President, Dr. Arthur Davies, in the chair, when the Purvis Oration will be delivered by Mr. Wilfred Trotter on the Surgery of Malignant Disease of the Pharynx.

HUNTERIAN SOCIETY.—The second dinner meeting of this society will be held at Simpson's Restaurant, 2 and 3, Bird-in-Hand Court, 77, Poultry, Cheapside, on Monday, Dec. 14th, at 7.30 P.M., when a discussion on Indigestion will be opened, from the medical standpoint by Dr. J. Campbell McClure, from the surgical by Mr. H. W. Carson, and from the mental by Dr. H. Crichton-Miller.

DIPLOMA OF PSYCHOLOGICAL MEDICINE.—A course of lectures and practical work will be held at the Maudsley Hospital, Denmark Hill, London, S.E., Part I. beginning in January, 1926. Those taking part will include Sir Frederick Mott, F.R.S., under whose direction the course will be held, Mr. Charles Geary, Dr. F. Golla, Dr. Henry Devine, Dr. Bernard Hart, Dr. Edward Mapother, Dr. C. Hubert Bond, Dr. F. C. Shrubsall, and Dr. W. C. Sullivan.

THE LONDON (R.F.H.) SCHOOL OF MEDICINE FOR WOMEN.—The annual dinner was held at the Savoy Hotel, London, on Dec. 3rd, Dr. J. Walter Carr presiding. Over 300 past and present students and guests were present. Lord Riddell, the president of the Royal Free Hospital, proposed the toast of the school and hospital and said that in the near future it was proposed to establish even closer union between the London School of Medicine and that hospital. The Chairman, in response, chronicled the retirement of Dr. May Thorne from her post of honorary secretary of the school in order to have more free time to devote to the appeal fund of the hospital, and welcomed as her successor Dr. J. Aitken. During the past year, he added, a new professor of pathology had been appointed in the person of Dr. J. H. Dible; the midwifery department had been brought under the same roof as the hospital, to the great convenience of the students; and nearly 100 students had qualified from the school. Mr. C. Joll proposed the guests, Miss Wilkinson, M.P., and Prof. Yandell Henderson replying. Prof. Henderson spoke with appreciation of the equipment and efficiency of British hospitals and medical schools. In spite of the wealthy foundations of the U.S.A., the position of professors and lecturers in those schools appeared to vary little as between the two countries, and they seemed to him to be at least as well off in Great Britain. The toast of the chairman, proposed by Dr. Chodak Gregory, was received with acclamation which testified to his popularity.

THE house of the Royal Society of Medicine will be closed from Thursday, Dec. 24th, to Monday, Dec. 28th, inclusive.

Mr. C. J. S. Thompson, M.B.E., has resigned his post as Curator of the Wellcome Historical Medical Museum, with which he has been associated since its foundation.

University College Hospital, London.—Mr. S. R. Lamb, who for the last five years has been secretary of the Sheffield Joint Hospitals Council, has been appointed Appeals Secretary to University College Hospital. Mr. Lamb carried out the "Penny-in-the-Pound" scheme, which has had an important effect upon the finances of the Sheffield hospitals.

Inverness Northern Infirmary.—At a public meeting at Inverness last week it was decided to enlarge Inverness Northern Infirmary at a cost of £100,000. Dr. D. J. Mackintosh, medical superintendent of Glasgow Western Infirmary, has reported that the buildings are antiquated, and has made proposals for the construction of new wards, the existing erections to be retained for administrative purposes and nurses' accommodation. The Northern Infirmary draws patients from all over the Highlands, and nine cases out of ten are surgical.

New Isolation Ward at Northampton.—Last week the Marquess of Exeter, Lord Lieutenant of the county, opened a new isolation block at Northampton General Hospital. The new wards are named after Sir James Crockett, who has defrayed a large proportion of their cost. An anonymous gift of £5000 has enabled the hospital to provide what Mr. Reginald B. Loder, the chairman of the board of management, described as "the very best electrical and X ray department in the whole of the United Kingdom." Since the war £50,000 has been spent in improving and extending the hospital.

The late Mr. Robert Owen, L.R.C.P. & S. Edin. The death has taken place of Mr. Robert Owen, of Penygroes, N. Wales, in his sixty-sixth year. He obtained his medical education at the Anderson College, Glasgow, qualified in 1892, and was a resident house physician at the Royal Infirmary, Glasgow. He took an active part in civic affairs, being a past chairman and alderman of the Carnarvonshire County Council, and chairman of the Joint Police Committee. He had a deep interest in the cause of charity in his district, and his death will be felt as a great loss. He leaves one daughter, who is married.

Birmingham Medical School: Centenary Celebrations.—A special Degree Congregation was held on Dec. 8th at the University, Edgbaston, to celebrate the centenary of the Birmingham Medical School. In the unavoidable absence of the Chancellor, Lord Cecil, the Vice-Chancellor, Sir Gilbert Barling, presided. A message was sent from the Congregation to the Chancellor of encouragement in his great work on disarmament at the League of Nations session at Geneva. The Principal, before presenting the honorary degrees, thanked Sir Charles Hyde for his magnificent gift to the University of £100,000. For the honorary degree of Doctor of Laws were presented: Mr. Neville Chamberlain, M.P., Sir Donald MacAlister, Sir Humphry Rolleston, and Prof. Priestley Smith. Mr. Chamberlain, in his address, referred to his long family and personal connexion with the University. "The University," he said "sets an example of enlightened civic action." The history of the Birmingham Medical School he described as a history of development and evolution, in spite of obstacles, to a position where it was now quite indispensable to the city. He reviewed the extent of public medical services in this country; the School Medical Service employed 1500 doctors, the Health Insurance Scheme treated 14,000,000 people and employed 13,000 doctors. He continued: "I desire to stress that the value of this vast organ of public service, coupled as it is with private service, is not fixed but depends on the persons engaged in it; the value of such an organisation depends on its power to attract to itself the best type of man who can only be produced by adequately equipped and adequately managed medical schools." He went on to indicate the lines along which progress might be made by extending post-graduate teaching and research, by reinforcing the existing local Cancer Board and the Board of Medical Research, and by keeping the public informed of the needs and hopes of the school.

In the evening a reception was held in the Great Hall by the Vice-Chancellor, the Principal, Mr. C. Grant Robertson, and the Dean of the Faculty of Medicine, Mr. W. F. Haslam. Amongst the notable medical exhibits set out for inspection were the portraits of Mr. William Sands Cox, F.R.S., founder of the Medical School and Queen's Hospital; of John Ashe, the founder of the General Hospital (1793); and of George Freer, surgeon to the General Hospital, who was the first surgeon successfully to ligature the external iliac artery for aneurysm. Side by side were to be seen a modern operating theatre completely equipped, and one of Lister's time, with the actual spray and table used by him and later by Sir William Macewen. Among many other arresting exhibits should be noted an admirable series of dissections of the cardiac auriculo-ventricular bundle, and a series of specimens showing the madder method of research on bone development.

International Tuberculosis Conference.—The next International Conference will be held at Washington, U.S.A., on Sept. 30th, Oct. 1st and 2nd, 1926. The International Union against Tuberculosis was founded in 1920. The headquarters are in Paris and in close relationship with the League of Red Cross Societies. Tuberculosis conferences under the auspices of the Union have been held at Paris (1920), London (1921), Brussels (1922), and Lausanne (1924). Subjects of great interest and exchange of ideas and methods for dealing with tuberculosis have been considered at these conferences, which are attended by leading scientists from all over the world. The International Union is directed by representatives of all the national tuberculosis associations, or in the absence of such association by representatives of the Government, of the countries within the League of Nations and the United States of America. Each country is represented on the Council of the Union by a definite number of representatives, Great Britain having five such official delegates. The conferences are open to members of the public on application to the respective National Association, and on payment of a small fee. At the forthcoming conference the subjects chosen for discussion are: (1) the part played by contagion in tuberculosis among adults; (2) anatomical structure of tubercle, from histogenesis to cavity; (3) tuberculosis and milk. Further particulars may be obtained from the Secretary, National Association for the Prevention of Tuberculosis, 20, Hanover-square, London, W. 1.

Manchester Cancer Hospital and Research Campaign.—The thirty-third annual report of the Christie Hospital (Cancer Pavilion and Home) states that the total of patients under treatment numbered 450 and the operations performed 323. The gifts and bequests amounted to about £18,000, including one of £3500 and three of £1000 each. The committee approves of the suggestions of the Cancer Research Committee as to coöperation with other institutions, and that the income from the Christie Hospital funds specially earmarked for this work should be pooled, but stipulates that the headquarters of the work should be at Manchester University, and that each institution should be represented on the Cancer Research Board in proportion to the funds it provides. The report of the medical board states that the youngest patient admitted during the year was 14 years of age, the oldest 84, and the average age 49. Of the 406 new in-patients, 112 were inhabitants of Manchester and 23 of Salford. A large proportion of the patients had been treated by radium. Mr. Wilson H. Hey, honorary surgeon to the hospital, said that in the Manchester district there were a million people of 40 years and over, and of this number they knew that 100,000 would die of cancer. Cancer did not attack the weak, but the strong and healthy. At present, though it seemed hardly believable, there were not 12 whole-time cancer research workers in these islands. We could not expect an early result with so few workers on this or any other obscure problem. Prof. R. B. Wild emphasised the fact that the local cancer committee was raising a separate fund in order to investigate what wanted investigation very much—the local conditions under which cases of cancer occurred, the environment of the patients, their occupations, their houses, and many other things. It was announced that the board of management had decided to extend the hospital.

University of Liverpool.—At the meeting of the University Court on Nov. 30th it was stated that students' fees met only one-third of the running cost of the University. In the current year the University would receive £11,200 additional grant from the Treasury, representing part of the University grant cut off under the Geddes axe. The Cheshire County Council had agreed to increase their grant from £300 to £1000, and the Lancashire County Council would in all probability raise their grant from £2000 to £4000. A warm tribute was paid to the untiring single-handed fight of Prof. J. Share-Jones, director of veterinary studies, extending over a period of 20 years, to secure Government recognition of veterinary science in a university. The Development Commissioners have decided to make a grant up to £15,000, on a pound-to-pound basis, for the erection of new buildings for the veterinary school. This is the first occasion on which funds have been offered from a Government source for the provision of buildings in the University. The expenditure on the general account is now in the neighbourhood of

£200,000, as compared with £80,000 only ten years ago. Vice-Chancellor J. G. Adami, in his report, stated that the number of women entering medicine had declined until it had reached almost vanishing point. The reduction was explained by the fact that women poured into the medical schools during the later years of the war and until three years ago, only to discover when they graduated after the war that it was almost impossible to obtain posts. The falling off in the number of dental students was a grave matter, for the country was in need of well-qualified dentists. The Act of 1920, with the object of preventing the extension of unqualified practice, demanded four years spent in training with relatively high fees. The question was whether it did not raise the requirements of qualification above the economic level, and while this was in doubt, the General Medical Council demands the equivalent of an additional year of study of pre-registration chemistry and physics. Throughout the country the admissions to dental schools had fallen to an alarming degree. An inquiry made in the summer term brought to light the fact that out of 1750 full-time students only 300 at the most indulged in sports and games. The time was ripe, and indeed overdue, Dr. Adami held, for the compulsory medical or physical examination of all students—men and women—upon admission, and periodically in later years, by a qualified medical staff, who would advise students regarding any special form of exercise and special care to be taken in individual cases.

Donations and Bequests.—Sir James Crockett has given £500 (£5500 in all) to Northampton Hospital extension.—Miss Catherine Beatrice Muntz, Tunbridge Wells, besides other bequests, left £2000 upon trust to assist young lads suffering from incurable disease, and £100 to the British Home for Incurables, and £50 each to a large number of charitable institutions.—Miss Agnes Ann Best, Cleveland-square, W., left £1000 to Manchester Royal Eye Hospital, and £250 each to St. Bartholomew's Hospital and the Paddington Green Children's Hospital.—Sir Charles Hyde, Bart., has given unconditionally a contribution of £100,000 to the University of Birmingham, and has left the spending of it entirely to the discretion of the Council of the University.—In celebration of his seventy-fifth birthday Mr. Bernhard Baron, of Hove, Sussex, has distributed £50,000 among hospitals and charitable institutions, and the Home for Aged Jews and three London Hospitals—Guy's, St. Thomas's, and St. Bartholomew's—receive each £2000, and the following £1000 each—viz.: Royal Northern Hospital, Hospital for Sick Children (Great Ormond-street), Royal Free Hospital, City of London Hospital for Diseases of the Heart and Lungs (Victoria Park), West London Hospital, Westminster Hospital, Royal London Ophthalmic Hospital (Moorfields Eye Hospital), University College Hospital, Brompton (Consumption) Hospital, St. Mary's Hospital (Paddington), St. George's Hospital, Home for Aged Jews (Home of Rest Building Fund), Rockefeller Foundation Gift for Obstetric Hospital, Prince of Wales's General Hospital (Tottenham), Reedham Orphanage, National Children's Home and Orphanage, Dr. Barnardo's Homes, Jewish Board of Guardians, Greater London Fund for the Blind, Salvation Army (Maternity Home), and British Legion (Earl Haig's Fund).

Appointments.

Masterman, L. Margaret T., M.B., B.S. Lond., has been appointed Assistant Medical Officer, Selly Oak Hospital, Birmingham.

Queen Charlotte's Maternity Hospital, Marylebone-road, N.W.: Hamilton, G. E. R., M.R.C.S., L.R.C.P. Lond., M.B., B.S., Senior Resident Medical Officer; Davies, Vyvyan J., M.R.C.S., L.R.C.P. Lond., Assistant Resident Medical Officer.

Westminster Hospital: Bell, P. S., M.R.C.S., L.R.C.P. Lond., and Jones, D., M.R.C.S., L.R.C.P. Lond., House Physicians; Davies, J., M.R.C.S., L.R.C.P. Lond., and Rubra, E. J., M.R.C.S., L.R.C.P. Lond., House Surgeons; and Daniel, G. M., M.R.C.S., L.R.C.P. Lond., Resident Obstetric Assistant.

Vacancies.

For further information refer to the advertisement columns.

Alexandria Municipality.—Chief Bacteriologist. L.E.900.
Bangor, Carnarvonshire, and Anglesey Infirmary.—H.S. £200.
Bath Ear, Nose, and Throat Hospital.—Hon. Dental S.
Bombay, Gokuldas Tejpal Hospital.—Hon. P. and two Hon. S.'s.
Bridge of Weir, near Glasgow, Consumption Sanatoria of Scotland.—Res. Med. Asst. £200–£250.
Brighton, New Sussex Hospital for Women and Children.—Radiologist. £100.
Brighton, Royal Sussex County Hospital.—Third Hon. Anæsthetist.
Bristol General Hospital.—Hon. Asst. S. to Ear, Nose, and Throat Dept.
Bury Infirmary.—Jun. H.S. £150.
Cancer Hospital, Fulham-road, S.W.—H.S. At rate of £100.
Chichester, Royal West Sussex Hospital.—Jun. H.S. £150.
City of London Hospital for Dis. of Heart, &c., Victoria Park, E.—P. to Out-patients.
Coventry and Warwickshire Hospital.—H.S. £135.
Dreadnought Hospital, Greenwich, S.E.—H.P. and H.S. Each at rate of £110.
Durham, Holywood Hall Sanatorium.—Med. Supt. £850.
East London Hospital for Children and Dispensary for Women, Shadwell, E.—Morning Cas. O. At rate of £120. Also H.S. At rate of £125.
Herefordshire General Hospital.—Hon. Orthopædic S.
Hospital for Sick Children, Great Ormond-street, W.C.—Res. Med. Supt. £300. Also H.S. £50.
Liverpool University.—Lecturer in Anatomy. £400.
Liverpool, Walton Institution, Rice Lane.—Res. Asst. M.O. £200.
London Homœopathic Hospital, Great Ormond-street, W.C.—Three Res. M.O.'s. At rate of £100.
London Hospital, E.—Asst. Obstet. and Gynæcological S.
Manchester, Monsall Hospital for Infectious Diseases.—Jun. Med. Asst. £350.
Middlesex Hospital and Medical School, W.—Two Surgical and One Medical Registrarships. Each £300.
Middlesex Hospital Medical School, W.—Cancer Research Scholarships. Each £150.
Mount Vernon Hospital, Northwood, Middlesex.—Jun. Res. M.O. £150.
Norwich, Norfolk and Norwich Hospital.—Res. Anæsthetist. £150.
Nottingham General Hospital.—Res. Cas. O. At rate of £200.
Oldham Royal Infirmary.—H.S.'s. Each at rate of £200.
Plaistow Fever Hospital, E.—Second Asst. M.O. £200.
Portsmouth Royal Hospital.—Third H.S. and Cas. O. At rate of £150 and £100 respectively.
Queen Mary's Hospital for the East End, Stratford, E.—Res. M.O., H.P. Two H.S.'s. Obstet. H.S. H.P. And Cas. O.
Royal Free Hospital, Gray's Inn-road, W.C.—Dist. Obstet. Asst. £100.
Royal London Ophthalmic Hospital, City-road, E.C.—Refraction Asst. £100.
St. Bartholomew's Hospital.—Asst. Ophth. S.
St. Mark's Hospital for Cancer, &c., City-road, E.C.—Anasthetist. £25.
St. Mary's Hospital, Institute of Pathology and Research.—Research Studentship. At rate of £200.
St. Peter's Hospital for Stone, &c., Henrietta-street, Covent-garden, W.C.—Clin. Asst.
Salford Royal Hospital.—Cas. H.S. At rate of £125.
Salisbury General Infirmary.—Hon. Ophth. S.
Scarborough Hospital and Dispensary.—Two H.S.'s. Each £126.
Sheffield Royal Infirmary.—Ophth. H.S. £80.
South London Hospital for Women, South Side, Clapham Common, S.W.—Clin. Assts.
Talgarth, Breconshire, Mid-Wales Counties Mental Hospital.—Asst. M.O. £350.
Willesden General Hospital, Harlesden-road, N.W.—Gynæcologist. Also Hon. P. to Out-patients.

The Chief Inspector of Factories, Home Office, London, S.W., announces vacant appointments for Certifying Factory Surgeons at Oxted, Surrey, and Tenbury, Worcestershire.

Births, Marriages, and Deaths.

BIRTHS.

Crowden.—On Nov. 29th, at Croyland, Edgware, the wife of Guy Pascoe Crowden, B.Sc., M.R.C.S., of a son.

Harvey.—On Nov. 26th, at 12, Western Hill, Durham, the wife of Dr. Charles A. Harvey, of a son.

Hughes.—At Lahore, India, on Nov. 17th, 1925, the wife of Major T. A. Hughes, I.M.S., of a son.

DEATHS.

Bate.—On Dec. 1st, at King Edward-road, South Hackney, E., George Paddock Bate, C.B.E., M.D., aged 82 years.

Clarke.—On Nov. 27th, at Woburn-square, W.C., George Mouat Keith Clarke, M.R.C.S., L.R.C.P., formerly of Gerrard-street, W., and Invercargill, N.Z., in his 88th year.

Davis.—On Nov. 25th, at Malone Park, Belfast, Lieut.-Colonel R. E. S. Davis, I.M.S., late Civil Surgeon, Rangoon, Burma.

Green.—On Dec. 1st, at Airhill, Glanworth, Co. Cork, Lieut.-Colonel James Sullivan Green, late R.A.M.C., aged 64.

Shaw.—On Dec. 2nd, at Dunstan-road, Golders Green, Oliver Shaw, M.D., late of Moseley, aged 71.

Thomas.—On Nov. 29th, Philip Marsden Thomas, L.S.A., L.R.C.P.I., L.M., L.D.S., F.P.S.G., of Thornton-avenue, S.W., aged 61.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Medical Diary.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

Monday, Dec. 14th.

WAR: at 5 P.M.
Paper:
Surg.-Commander J. L. Priston, R.N.: The Prevention of Scurvy in the Royal Navy.

Tuesday, Dec. 15th.

GENERAL MEETING OF FELLOWS: at 5.30 P.M.

Wednesday, Dec. 16th.

HISTORY OF MEDICINE: at 5 P.M.
Paper:
Dr. J. D. Rolleston: Voltaire and Medicine (Part II.).

Thursday, Dec. 17th.

DERMATOLOGY: at 5 P.M. (Cases at 4 P.M.)
Cases:
Dr. H. C. Semon: Multiple Idiopathic Sarcoma (Kaposi).
Dr. Barber: Lupus Pernio showing Result of Treatment with Carbon Arc Lamp.
Other cases will be shown.

DERMATOLOGY.
STUDY OF DISEASE IN CHILDREN. } at 8.30 P.M.
Discussion on
The Ætiology and Treatment of Infantile Eczema.
Speakers:
Dr. H. C. Cameron and Dr. F. Langmead (for the Section for the Study of Disease in Children).
Dr. A. M. H. Gray (for the Section of Dermatology).

Friday, Dec. 18th.

ELECTRO-THERAPEUTICS: at 8.30 P.M.
Papers:
Dr. R. E. Roberts and Dr. Morris J. Cohen (Liverpool): Paget's Disease of Bone.
Dr. P. J. Briggs (New Lodge Clinic): Methods of Examination of the Pelvic Cæcum.

MEDICAL SOCIETY OF LONDON, 11, Chandos-street, Cavendish-square, W.
MONDAY, Dec. 14th.—8.30 P.M., Discussion on the Treatment of Genito-Urinary Tuberculosis in the Male, to be introduced by Mr. Cyril A. R. Nitch, followed by Mr. Kenneth M. Walker, Dr. Stephen R. Gloyne, and others.

ROYAL SOCIETY OF TROPICAL MEDICINE AND HYGIENE, 11, Chandos-street, Cavendish-square.
THURSDAY, Dec. 17th.—8.15 P.M., Sir Thomas Carey Evans: Paper on the Surgical Aspects of Amœbiasis. Discussion to be opened by Major K. K. Chatterji, of Calcutta. Lantern slides will be shown preceded by a demonstration at 7.45 P.M.

CHELSEA CLINICAL SOCIETY.
TUESDAY, Dec. 15th.—8.30 P.M. (in the Board Room of St. George's Hospital), Colonel W. L. Watt and Mr. S. Forsdike: Discussion on Deep X Ray and Radium Treatment.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W.
MONDAY, Dec. 14th, to SATURDAY, Dec. 19th.—Lecture Room of the Medical Society, 11, Chandos-street, W. Sir John Thomson-Walker will deliver a lecture on Urinary Tuberculosis at 5.30 P.M. This lecture is open to all members of the medical profession free of charge.—HAMPSTEAD GENERAL HOSPITAL, Haverstock-hill, N.W. Second week of a Course in General Medicine, Surgery, and the Specialties. Daily, 4.30 to 6 P.M. Lectures and demonstrations.—HOSPITAL FOR DISEASES OF THE SKIN, Blackfriars-road, S.E. Course in Skin Diseases, second week. Instruction in the Out-patient Dept. every afternoon from 2.30, and a Venereal Clinic Tuesday and Friday, 5 P.M. All information as to fees, &c., from the Secretary of the Fellowship.

QUEEN CHARLOTTE'S MATERNITY HOSPITAL, Marylebone-road, N.W.
THURSDAY, Dec. 17th.—5 P.M., Mr. L. Williams: Albuminuria of Pregnancy.

CENTRAL LONDON THROAT, NOSE AND EAR HOSPITAL, Gray's Inn-road, W.C.
FRIDAY, Dec. 18th.—4 P.M., Dr. Dan McKenzie: Early Mastoid Operations.

ROYAL INSTITUTE OF PUBLIC HEALTH, 37, Russell-square, W.C.
WEDNESDAY, Dec. 16th.—4 P.M., Prof. L. McIlroy: The Results and Prevention of Puerperal Sepsis.

MANCHESTER ROYAL INFIRMARY POST-GRADUATE COURSE.
TUESDAY, Dec. 15th.—4.15 P.M., Dr. A. H. Holmes: Disorders of the Thyroid Gland.
FRIDAY.—4.15 P.M., Sir William Milligan: Modern Technique in the Diagnosis and Treatment of Foreign Bodies Impacted in the Air Passages.

JAMES MACKENZIE INSTITUTE FOR CLINICAL RESEARCH, St. Andrews.
TUESDAY, Dec. 15th.—4 P.M., Prof. A. Patrick: The Treatment of Diabetes.

Notes, Comments, and Abstracts.

THE HYGIENE OF MENSTRUATION.

AN AUTHORITATIVE STATEMENT.

A STATEMENT, based on the published observations of doctors who have had opportunities of examining large numbers of girls, has been issued under the auspices of the Medical Women's Federation.[1] It is intended primarily for the use of schoolmistresses and parents, and should serve to make clear the modern view that a girl during the time of menstruation should not be considered "unwell." Its terms are as follows:—

> Menstruation is a natural function; it is not an illness, and girls should therefore continue their ordinary work and play during the period. It should not be and is not normally accompanied by pain or malaise.
>
> There is no risk in taking a bath during the period; in fact it is desirable that a warm bath should be taken daily. It is a good remedy for any slight pain or headache which may occur. Where the girl is accustomed to a daily cold bath this may be continued during the period, but for obvious reasons swimming in public baths cannot be allowed.
>
> It is important that there should be a daily action of the bowels.
>
> There is no risk in allowing a girl to join in ordinary games and gymnastics. Exercise, especially exercise involving bending of the body, has been found in many cases to lessen or cure menstrual pain. The practice of giving alcohol in any form at these times is most inadvisable.
>
> Girls should not be allowed to get into the habit of resting or lying down at this time. It has been found by medical officers of girls' schools that this leads to menstrual pain and malaise, which does not occur when girls continue their ordinary games, walks, and other exercise.
>
> While it is desirable that girls should take part in games, long expeditions or cycle rides, or matches or competitions in which there is a strong incentive to exhaust the reserves of strength should be indulged in with some caution, especially during the early years of adolescence.
>
> If a girl suffers from pain or other disability, it is a sign that there is something wrong, and it is essential that a doctor should be consulted. The underlying conditions are much more easily cured at the onset.

The advice is sound, especially the recommendation to discourage girls from lying down or resting during these periods as a routine measure. If attention is focused on any slight discomfort it will assuredly be looked for, whereas if little disturbance of ordinary life is the rule, few girls will be found to require special measures.

THE INFLUENCE ON HEREDITY OF JEWISH CUSTOMS.

IN the course of a lecture delivered on Dec. 5th at the Whitechapel Art Gallery under the auspices of the Jewish Health Organisation of Great Britain Dr. Redcliffe N. Salaman discussed heredity as a factor in public health. He spoke of the inheritance of mental deficiency, as exemplified in one deplorable family record, contrasting it with the incidence of ability and high character shown, for example, in the Darwin-Galton-Wedgwood family. Here, in five generations, besides numerous men of high character and civic worth, occurred 16 men of highest rank in science, and the women-folk include a well-known poetess and others of outstanding ability. Considering what these two types of families mean to the nation, Dr. Salaman said that a mental defective who lived to the age of 50, and was cared for by the public authorities, could not cost the State less than £5000, whilst the indirect loss occasioned by such an individual probably reached a similar amount. Sterilisation of mental defectives was probably beyond the limit which public opinion would sanction, and possibly beyond what science would to-day be inclined to dictate. The Jewish community might, however, make a register of such persons, and keep them under surveyance, in order that any defective children might at once be segregated. This would enable them to learn more of the nature of heredity of such troubles, and when sufficient information had been collected the necessary measures could be taken to prevent the increase of such defects. It might seem to many that proposals to segregate individuals for life, or to abolish their power of activity, was too drastic a remedy. If any who thought this would but inquire what it already costs the nation to maintain these unfortunates in careful segregation till the age of 16, only to allow them to propagate their kind when they regained freedom, they would see good reason to alter their views. But even without legislation much could be done. Parents of children who are epileptic or are deficient in any way should do their utmost to prevent their children from marrying. In Jewish circles marriage had been considered with such veneration that even degenerates had been forced into the marriage state. It was to this practice that they owed the lamentable fact that their community contained such a large proportion of mentally unfit. It was, however, right to point out that the fact that the percentage of highly gifted was also abnormally high in their midst, was also due to heredity, and to their anxious pursuit of the marriage state. The old custom of marrying the rich man's daughter to the most promising student of the Yeshibah was one of the most successful and illuminating eugenic experiments ever conceived. The time had now come when, whilst adhering to all that was sound in the old, they must advocate new methods in order to promote the betterment, moral and physical, of mankind.

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[1] Medical Women's Federation News Letter, November, 1925, p. 53. Obtainable from the office of the Federation, 9, Clifford-street, Bond-street, London, W., in leaflet form. 1s. per 100 copies.

ESKIMOS AND THEIR HEALTH.

IN a description[1] of the health of the Eskimos, Dr. S. K. Hutton, who has spent seven years in Northern Labrador, first outlines the climate, the food, and habits of life. The climate is comparatively regular; the excessive cold of winter only giving place for a few short weeks to summer. The only break in the regularity is the sudden occurrence for three or four days of a period of thaw in either February or March. Eskimo dietary is mainly flesh and fish; vegetable foods are decidedly scanty. They cultivate no plants, but obtain in autumn a small black watery berry which is stored in barrels and allowed to freeze for winter store. Of flesh that of seal is the most important, and is eaten raw and full of blood; fish also, in the warmer part of the year, is obtained in plenty and is eaten fresh, often raw or dried, without salt. Cod-liver oil is used considerably; dried fish is dipped in it. The dietary is rich in vitamins, with the exception of the anti-scorbutic vitamins. The Eskimo lives a life of activity and strain. He has great power of withstanding fatigue, and is inured to exposure to the weather. His house is small, ill-ventilated, dirty, and ill-smelling—a dark and noisome den. Refuse is simply thrown out of the door where, fortunately, it freezes—but in summer it thaws. Promiscuous consanguinity prevails.

The Eskimo possesses a low resisting power to disease; few live beyond 60, those few are aged and feeble. They possess a tendency to hæmorrhage, of which epistaxis, menorrhagia, and hæmoptysis are the most common form, the latter quite distinct from that of pulmonary tuberculosis. These hæmorrhages indicate a scorbutic condition, and lime juice is the most effective remedy. Although the Eskimos will run far and fast without affecting their pulse-rate, and endure laborious toil, when they are seized with illness cardiac debility becomes pronounced. Similar debility occurs during confinement, but only prolongs the process, which is usually simple and uneventful. Typical scurvy is rare, but the scorbutic tendency is common, particularly if the berry crop fails, as it did in 1904–5. Then "kallak," a pustular skin eruption, broke out, but it gave way to anti-scorbutic treatment. The tendency to suppuration is pronounced; nearly all cases of mumps end in suppuration, as do many ordinary bruises. Typhus appeared once, but was fortunately quickly eradicated, for lice are common in Eskimo huts. Tuberculosis is not widespread, but attacks certain families, who are carried off with "galloping consumption"; it is a very fatal disease, and death may result in about six weeks from onset. Diseases of the nervous system are not common, with the one exception of paralysis of the facial nerve due to cold winds. Occasionally drunkenness occurs, but chronic alcoholism is unknown. Epilepsy occurs among the Eskimos, but insanity is uncommon, even though the mental balance is unstable. Inguinal hernia is uncommon, but a form of small epigastric hernia occurs in males. The commonest eye disease is pterygium, attributable to the irritating effect of strong light; it occurs more frequently in women than in men, since the man wears glasses to protect him from snow-glare, while the woman often just goes out of the dark hut into the bright light without glasses. Snow-blindness is common among children, but it always ends in recovery. Dr. Hutton never saw a case of malignant new growth, nor of rickets. Babies suckle often for two years, and any mother feeds any child. For the most part Eskimos are very sensitive to drugs, normal doses being poisonous to them. Mercury is an exception. Influenza is endemic, and does not appear to have been introduced from without. It arises annually in February with the short seasonal thaw, and again in August. Its origin is ascribed to the method of refuse disposal; specially interesting instances of outbreaks are given. The disease may be bronchial, gastric, or meningitic, varying in epidemics; the gastric form is the most fatal.

A disease which is causing great damage to the Eskimos is syphilis, which was brought back by a party of Eskimos who had been exported for exhibition purposes. Although its introduction is recent, the ravages it is causing do not compare in severity with those which followed its introduction in Europe. Primary symptoms tend to be somewhat indefinite; but the secondary manifestations are clear, except that a secondary rash is rare. The disease is so recent that tertiary manifestations have not, it is said, yet had time to develop. The full-blooded meat-eating Eskimos seem to have a natural protection against it. Child mortality is excessive, and is no new thing, since the ancient burying places are full of children's graves; but it appears to be getting worse. Even those that survive the first year run serious risk during the ages 3 to 5. The main causes of this great mortality among Eskimo children lie in constitutional debility and lack of resisting power to disease. Dr. Hutton discusses the future of the Eskimos, and feels uncertain whether, as Europeanisation spreads, the race will survive.

This monograph contains much valuable material presented as the result of first-hand observation. Illustrations are lacking, but these can be found by consulting an excellent article[2] recently published on the MacMillan Arctic Expedition.

THE HEALTH OF AN ARMY IN THE FIELD.

HEALTH was well represented in the wireless programmes on Dec. 4th, with "Hygiene in the Kitchen" from Oslo, "Hygiene" from Paris, and, above all, Sir W. B. Leishman, in London, on the "Health of an Army in the Field." Diseases, said the Director-General, were more dangerous to soldiers than were wounds. Wellington lost 460,000 men in the Peninsular campaigns, only 60,000 of them from wounds. To keep an army healthy is a laborious and never-ending toil. Formerly there were five who died of disease to each one killed by the enemy; but in the Great War, of the 739,000 who were killed or died, only 84,000 died of disease, 8 in battle to 1 of disease, a triumph for the medical service. Recruits when taken in were carefully trained physically, made thoroughly healthy and tough; surely they would remain healthy? Far from it. Dangers are greater than before; so many more men are engaged. Freedom of communication allows exotic disease to disseminate more freely; there were 14 theatres of war, in many of which troops of various races were employed. To what was the medical victory due? To five particular lines of policy. (1) Food. By the self-sacrifice of those at home the army had in plenty, but as the usual foodstuffs became unattainable the difficult adjustments needed to keep the ration balanced were made possible by research. (2) Water was often difficult to obtain, but safe supplies were ensured from dangerous sources by filtration and chlorination. (3) Hygiene and sanitation were carefully watched, on the march, in villages, in the trenches, with ever-increasing warfare against flies. Our army had advantage over others in that the responsibility for the sanitation of units is, with us, shared by the commanding officer and the medical officer. Our men had good clothing and baths, and their vermin were destroyed. (4) Disease was detected early by pathologists at every hospital, and in mobile laboratories up almost to the fighting line. Quick detection of epidemic diseases is of the first importance to prevent spread, whether by infection, by food, or by bad water. (5) Inoculation. Vaccination prevented small-pox; typhoid, the disease we most feared, was held in check by inoculation. The French, who did not at first inoculate, had in the first nine months 7036 deaths from typhoid, while England had but 208 in the whole war. But that we had so well devised methods for preventing disease, the losses of the war would have been infinitely worse.

GIFTS TO MIDDLESEX HOSPITAL.—A "Rejected lover who has no more use for them" has sent to the Middlesex Hospital two gold and platinum brooches to be sold for the benefit of the rebuilding fund.

A HOSPITAL SCHOOL.—At the Northcourt Hospital for Sick Children in College-crescent, Hampstead, the London County Council conducts a handicraft school for children between 4 and 15 years of age. There are at present 34 children in the school, who are taught needlework, basket-making, knitting, and similar crafts during their convalescence. The hospital was established half a century ago for the treatment of children suffering from chronic or incurable diseases of an aggravated character.

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[1] Health Conditions and Disease Incidence Among the Eskimos of Labrador. By S. K. Hutton, M.D. Pp. 74. 1925. J. Looker, Ltd., The Wessex Press, 82, High-street, Poole. 6*s.*

[2] The MacMillan Arctic Expedition Returns. By D. B. MacMillan. The Nation. Geograph. Mag., xlviii., November, 1925, pp. 477–518.

Two Lectures
ON THE
EFFICIENCY OF THE HEART
AND ITS MEASUREMENT.

University of London Advanced Lectures in Physiology, delivered at University College, Nov. 30th and Dec. 1st, 1925,

BY YANDELL HENDERSON,
PROFESSOR OF APPLIED PHYSIOLOGY, YALE UNIVERSITY.

LECTURE I.*—THE MEANING AND CONDITIONS OF EFFICIENCY.

THE conception of the efficiency of the heart which is now current in clinical medicine falls far short of being as definite as is desirable. It is essentially qualitative. None of the tests now available, or employed by physicians, approach a real measurement of the supremely important function of the power of the heart. The physician applies his stethoscope at various points on the chest and listens. He percusses and thus outlines roughly an area of dullness. He has the subject change from the recumbent to the erect position. He has him step up and down on a chair, or climb a flight of stairs, and he notes the alteration of pulse-rate and arterial pressure. He notes also—and this is really a more significant test than any other—whether the patient is out of breath on moderate exertion. But all these tests, valuable as they are in the absence of any means of estimation more precise, do not constitute an adequate measurement of the efficiency of the heart.

The heart is a pump. As with any other pump there is only one form of measurement that is direct and absolute—viz., measurement of the volume discharged by each stroke of the pump, or taking the rate of beat into account, the volume pumped per minute. Hitherto there has been no method available, except for quite special laboratory purposes, for measuring in litres a minute the volume of blood that the heart of a man, woman, or child, sick or well, resting or working, actually pumps in a minute. Fortunately, a method[1] has recently become available by which this measurement can be made quickly, easily, and on anyone; a method suitable alike to the laboratory or to clinical purposes.

In the second lecture we shall consider some of the results already obtained with this method. But first, what should we understand by the term "efficiency of the heart"? What is it that the heart has to do? Evidently the heart does not exist and act simply for itself. It is not only a pump. It is also the chief respiratory organ of the body. It determines the supply of oxygen to the body and thus fixes the maximal amount of energy available for the body's use.

RELATION OF THE CIRCULATION TO RESPIRATORY METABOLISM.

Modern physics, which only a little while ago drew a hard-and-fast distinction between matter and energy, now tells us that, fundamentally, matter is energy. In the living body there is one sort of matter, one element, which to all intents and purposes is energy. That element is oxygen. Each litre of oxygen absorbed in the lungs becomes for the use of the body almost exactly 4·8 large calories. The maximum theoretical variation is only from 4·7 calories, when the litre of oxygen is used to burn fat, up to 5·05 calories per litre, when it burns sugar. For all physiological purposes, therefore, the most convenient unit of energy is the litre of oxygen. Thus the power supplied to the body by an athlete's heart is about four litres of oxygen a minute, or in ordinary units of energy, 20 large calories a minute. This seems to be about the maximum quantity that can be withdrawn from the air of the lungs and transmitted to the labouring muscles.

Both in clinical medicine and in physiology there are two subjects which now are studied quite independently. The heart is one. The other is the energetics and gaseous exchange of the body, especially in the procedure of basal metabolism. Neither in clinic nor laboratory are these two subjects now associated except in a vague and hypothetical fashion. This is the greatest gap and defect now existing in both fields. Neither data nor methods have been available for the quantitative correlation of the volume of blood pumped by the heart, in all sorts of people, well or ill, with the respiratory exchange and energy expenditure. The object of these two lectures is, now that data and a method are available, to present a conception of the circulation and the heart based quantitatively on respiratory metabolism.

EFFICIENCY OF THE LUNGS.

The pumping power of the heart is, indeed, not the only element or stage in the passage of oxygen from the air to the tissues at which the flow of oxygen might be limited. It might be asked whether a man can breathe in and out of his lungs in one minute a sufficient volume of air to ventilate fully the maximum amount of blood that the heart can pump through the lungs. The figures for the volume of blood pumped by the heart, as determined by the new method above referred to, are 5 to 7 litres per minute during bodily rest, and 25 to 30 litres of blood flowing through the lungs in a minute during vigorous muscular work. The figures for respiration are 6 to 8 litres of air breathed during rest and 60 to 80 or even 100 or more as the actually observed volumes inhaled and exhaled by a vigorous man doing hard work. Evidently a man can breathe far more air than the amount corresponding to even the largest increase in the rate of circulation of the blood. Thus, when a man is out of breath, as we call it, from running, his trouble is not fundamentally in the inability of his chest muscles and the diaphragm, working on his lungs, to draw in and exhale enough air. The real limitation is in his circulation, that is, in the pumping power of his heart, and in the transportation of oxygen and CO_2 by the blood. Similarly, the patient with cardiac disease usually has no sensations that he refers to his heart, but reports that he is "short of breath," although it is essentially his blood pump, not his air pump, that is defective.

Air might be drawn into the lungs in sufficient amount and yet the diffusion of gases through the membranes of the lungs into the blood might be so slow that, during hard work, the blood rushing through in a torrent four or five times as fast as during bodily rest would be incompletely oxygenated. Space forbids dealing here with the literature of this topic. I have for some years past been engaged in investigations on the absorption and elimination of volatile substances through the lungs. The evidence convinces me that, at least during full normal breathing, diffusion between the air and the blood in the lungs is virtually instantaneous. With any volatile substance the equilibrium of pressure in the gaseous phase in the air and in the dissolved phase in the arterial blood flowing from the lungs is at all times virtually complete. A. and M. Krogh have, indeed, reached a somewhat different conclusion on the basis of a method devised originally by Bohr for measuring the "diffusion constant" of the lung by the diffusion of carbon monoxide; but Dr. J. S. Haldane tells me, and I mention it by his permission, that, in work not yet published, he finds that the diffusion of carbon monoxide is so rapid and complete that he also is led to estimate diffusion through the lung membranes as normally affording an almost instantaneous equilibrium between the air and the blood in the lungs.

Of course this condition does not hold when the lungs have been rendered œdematous by an irritant gas; and practically it ceases to apply in shallow breathing, as, for example, in pneumonia. But the practical point is whether or not the power of an athlete or a normal working man is ever limited by the slowness of the diffusion of oxygen through his lungs. That this is not the case we can infer with certainty from an observation which everyone has made or can easily verify. It is that, even during the most intense physical exertion, the lips, ears, and cheeks of a normal man never show the faintest trace of cyanosis. A fact like this, one that can be observed and verified in everyday life, outweighs as evidence any amount of experimental laboratory demonstration that it ought not to be so.

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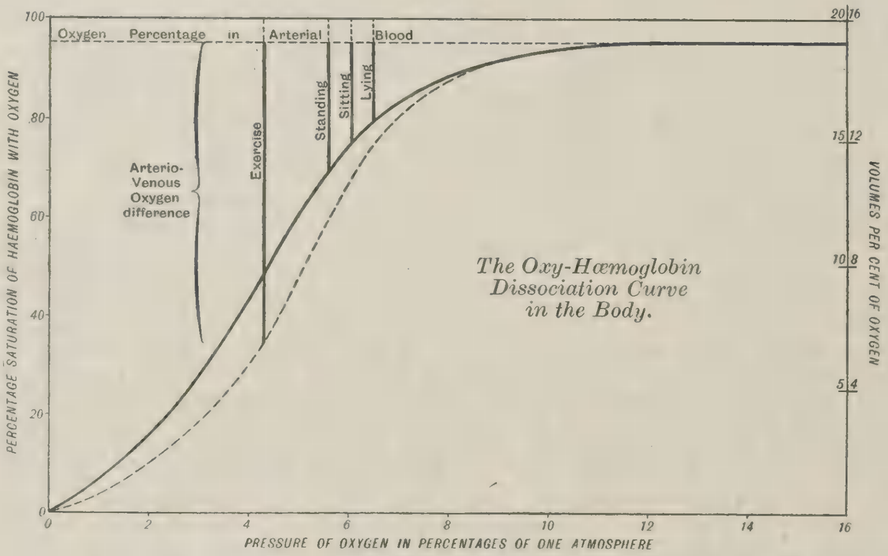
* Lecture II. will appear in a coming issue of THE LANCET.

[1] Henderson and Haggard: Amer. Jour. Phys., 1925, lxxiii., 193.

OXYGEN TRANSPORTATION BY THE BLOOD.

The amount of oxygen that the heart can send to the tissues is limited by the oxygen capacity of the blood. According to the Haldane standard 18·5 c.cm. of oxygen is the maximum in 100 c.cm. of normal blood. It would be truer to say that the normal range is between 16 and 20 c.cm. of oxygen in 100 c.cm. of blood. But 100 c.cm. of blood pumped by the heart do not represent 18·5 c.cm. (or 16 or 20) of oxygen available for the work of the tissues. Some of it, ranging from a sixth to a quarter, we may call high pressure oxygen, and this is all that is used during bodily rest. During heavy and continuous muscular work (such as digging with pickaxe and shovel) a much larger percentage is used, and we may call this medium pressure oxygen, because the larger the utilisation the lower falls the pressure. Finally, during extreme exertions such as an athlete makes in a contest, 60 or 70 per cent. may be utilised—that is, 12 or 14 c.cm. of oxygen may be consumed by the tissues from each 100 c.cm. of blood; and this we may call low pressure oxygen.

FIG. 1.



In Fig. 1 are reproduced the oxyhæmoglobin dissociation curve in the body (after Christiansen, Douglas, and Haldane) with some additions to illustrate its application in this connexion. The broken line is approximately the probable form of the curve during vigorous muscular exertion. The upright lines show approximately the amount of oxygen withdrawn in the tissues—that is, the arterio-venous oxygen difference. With the new method of measuring the circulation we find that approximately, during bodily rest, lying down, the amount is 3 volumes per cent.; sitting it is 4; standing it is 5 or more; during heavy work it is 7 or 8; and with intense exertion it is 12 volumes per cent. or more. The pressures corresponding to these amounts of oxygen are to be read from the scale below the abscissa.

From this figure we see that, if in a patient with heart disease the total consumption of oxygen by the body remains normal at the usual basal metabolism for his size and age, and if the efficiency of his heart is so reduced that it pumps only two-thirds of the normal volume per minute, then the arterio-venous oxygen difference will be 50 per cent. greater than in a normal man, and the patient will experience a marked decrease in his capacity for muscular exertion. In fact, we find in ambulant but easily winded cardiac patients that measurements of the circulation in sitting rest show about two-thirds of the normal blood-stream. Thus the large blood flow supplied by the normal heart is important because it affords an ample supply of high pressure oxygen in the tissue capillaries. In fact, the arterio-venous oxygen difference is the best possible index and measure of functional efficiency of the heart.

It is, however, probable that each tissue has a specific oxygen difference of its own. That of muscle is large, as L. Hill and Nabarro have shown. Thus the increase of the general arterio-venous oxygen difference for the body as a whole during work is apparently due in large part to the relatively greater proportion of blood flowing through the muscles.

THE ARTERIO-VENOUS OXYGEN DIFFERENCE.

Unfortunately, this is a figure which can only be calculated when every other factor has been measured. To determine it directly on a man would require that some blood should be drawn direct from an artery and its content of oxygen determined by analysis; and also that a long needle of a hypodermic syringe should be thrust through the chest wall into the right side of the heart so as to withdraw for analysis a sample of the mixed venous blood which it contains. The difference in the oxygen contents of these two samples would show the relation of the blood flow and oxygen transportation to the body's oxygen consumption. Blood from a peripheral vein, such as one in the arm, does not serve the purpose, because it comes from only a limited and special area and not from the body as a whole. Blood can be withdrawn from the heart of an animal without causing any pain or injury, and I have a friend in America, an enthusiastic young investigator, who is willing and anxious to have cardiac puncture done on himself, but his associates decline. Fortunately, the figure for the arterio-venous oxygen difference can now be calculated for a man on the basis of a determination of his oxygen consumption and of his circulation. The one divided by the other gives the arterio-venous oxygen difference.

The last stage in the passage of oxygen to the tissues is its diffusion from the blood in the capillaries into the working cells and especially into the muscle-fibres. As Krogh has pointed out, the force which causes diffusion from the blood into the tissues is the difference in the pressure of oxygen. The higher the pressure of oxygen the more rapid the diffusion. But the pressure of oxygen in the capillary blood is dependent upon the volume of the blood flow; a relatively large flow means a relatively large supply of oxygen and hence a relatively high oxygen pressure. When, on the contrary, the volume of blood flowing through the tissues is small in relation to the oxygen there consumed, its pressure falls far down on the oxyhæmoglobin dissociation curve. Thus, the volume of blood pumped by the heart is the fundamental factor in the pressure of oxygen in the capillaries.

The normal value or amount of the arterio-venous oxygen difference in all vigorous mammals, such as dogs, men, and horses, is closely correlated with the intense metabolism required in warm-blooded animals. The value is probably nearly the same throughout the range of mammals of all sizes. Determinations in my laboratory have shown that this is certainly the case for dogs and men, from very small dogs up to very large men. The value is of the order of 3 or 4 volumes per cent. For inactive species of animals—e.g., the goat—it is probably larger. It is not dependent upon the animal's size, that is, its weight, nor upon its skin area, total metabolism, and energy expenditure, but is probably a fundamental mammalian constant. It is one of the vital constants, like the osmotic pressure and hydrogen-ion concentration of the blood, and its sugar-content, or body temperature, arterial pressure, and so on. Physiologically, health may be defined as the maintenance of all such "vital constants" within the range of their normal variations. A single figure for any one of them is quite unjustifiable and misleading. They vary within a normal range. Disease is the perversion of one or more of them to a value beyond the normal range.

The Volume of the Circulation.

The approximate uniformity of the arterio-venous oxygen difference affords an absolute arithmetical proof of another important fact—namely, that the circulation in all vigorous active mammals of all sizes during rest is about 25 to 30 litres of blood pumped by the heart for each litre of oxygen consumed in the body's metabolism.

This conclusion in turn leads to another, for if the basal metabolism, normal for a man or animal, determines the amount of blood flowing through the lungs during bodily rest, we next ask the question: What determines the individual's basal metabolism? The answer to this question is afforded by Rubner's law that all mammals have approximately (i.e., within a certain range) the same amount of heat production, and therefore the same oxygen consumption, per unit of skin surface. On this account small animals have a very high metabolism for their body-weight. Mice have many times as great a skin surface, exposed to the cooling action of the atmosphere per gramme of weight, as men have. So a mouse eats his own weight of food in about as many days as a man does months. The volumes of air that are breathed by mice and men, and the volumes of oxygen that they consume, are in the same proportion. Even for human beings of various sizes, men, women, and children, it has been shown by Benedict, and particularly by Du Bois, that it is not body-weight that underlies the basal metabolic rate and therefore the resting oxygen consumption; but that the main factor is skin surface.

So we arrive inevitably at the conclusion that the rapidity of the circulation, that is, the pumping activity of the heart in healthy men and animals, is not proportional to their body-weights, but in general (for animals corresponding in other respects, especially activity and vigour) to their surfaces, that is, their skin areas. And we see that small mammals and small people must have relatively large circulations and relatively active hearts per kilo of body-weight. The circulation index, as we term it, for man, and probably for all vigorous active mammals of all sizes, is of the general magnitude of 3 or 4 litres of blood per minute per square metre of skin. For lethargic, but non-hibernating, mammals of all sizes it is probably about a third less per square metre.

The next question is: How does the heart of a small mammal or a small person accomplish this relatively greater pumping action? How in larger subjects is the pumping relatively less? The volume of blood that the heart drives to the lungs each minute in any individual is the arithmetical product of two factors: (1) The number of heart-beats in a minute, that is, the pulse-rate; and (2) the volume of blood discharged by each beat, that is, the so-called stroke volume. But for animals of different sizes, for people of different weights, and for both people and animals during the variations of activity of sleep and work, and extreme muscular activity, we wish to know whether and to what extent each of these factors is varied. The pulse, fortunately, is easily counted. But the stroke volume is less easily obtained. Indeed, what we want to know is: (1) How the stroke volume varies in animals and especially in people of different weights; and (2) how it varies in an individual when he passes from rest into various degrees of muscular activity. These are separate problems and must be discussed separately.

The resting or basal stroke volume in large and small animals and in large and small people, is it determined by body-weight or by body surface? Of course, the larger the stroke volume that a heart makes, the larger that heart has to be. If, then, small and large animals had hearts proportional in size to their skins, the hearts of such animals as men and horses would be quite small organs in relation to the size of the thorax, while the hearts of mice and rats would be so large as to fill the entire chest cavity. In fact, however, if the cross section of the thorax of a small mammal is projected by means of a stereoptical lantern on the screen and beside it is thrown the cross section of the thorax of a large mammal of corresponding vigour, the hearts are seen to be approximately of the same size. Thus the size of the heart is in general correlated with an animal's body-weight (subject to the proviso of corresponding vigour) and not with its surface. The ratio of heart-weight to body-weight (as I am informed by Prof. A. J. Clark, who is preparing a review of this subject in the Cambridge Comparative Physiology series) is nearly the same in the rat, cat, pig, sheep, ox, and elephant. All of these are animals incapable of prolonged rapid running, and have therefore smaller hearts than such vigorous animals as dogs, men, and horses. On the physiological side the relation between the stroke volume of the heart and the body-weight for vigorous mammals, from small dogs up to large men, has been worked out in my laboratory. We find that, in all healthy, vigorous individuals during bodily rest, the heart throws out at each beat approximately 1·4 to 1·8 c.cm. of blood for each kilo of body-weight. This quantity needs a name, so we call it the resting or basal "stroke index." Vigorous, active men and animals have larger stroke indices than those which are lethargic. The relatively slow animals (rat to elephant) probably have a stroke index about a third smaller.

So we conclude that: (1) the basal circulations of vigorous mammals of all sizes are proportional to their surfaces; and that (2) the stroke volumes are proportional, not to their surfaces, but to their body-weights; or, more precisely expressed, the stroke index for all vigorous men and animals of all sizes is probably about the same—namely, 1·4 to 1·8 c.cm.

Evidently the basal or resting pulse-rates for men and animals of corresponding vigour must be functions, not of body-weight, but of the ratio of body surface to weight. In general the data available verify this deduction. The resting pulse-rate for a horse is about 40 per minute, for a vigorous man about 60, for medium-sized dogs about 110, for cats considerably more, and for quite small animals many hundred beats per minute. In general, as Miss Buchanan [2] found some years ago and as Prof. A. J. Clark shows in the review which he has kindly allowed me to see in manuscript, when the vigour and activity of the species and individual are allowed for, the pulse-rate is found in accord with the surface weight ratio.

Three Reserves of the Circulation.

The variations in the circulation of an individual, for example an athlete, when he is at rest or exercising moderately or making a maximum exertion in a contest, is a more difficult problem to estimate. The circulation has three possible reserves: (1) the pulse-rate may be accelerated; (2) the arterio-venous oxygen difference may be increased; and (3) the stroke volume of the beats may be augmented.

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[2] Buchanan, F.: Science Progress, July, 1910, No. 17, p. 60.

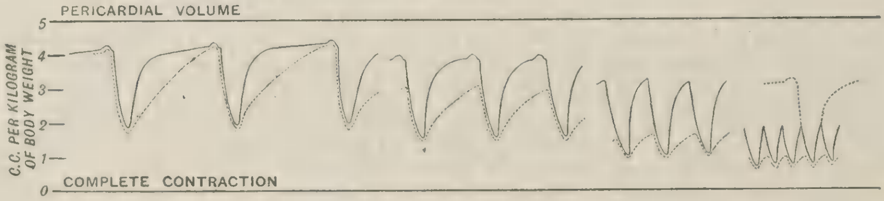
The pulse is accelerated by even the slightest muscular exertion, even in the most vigorous men. This acceleration is usually roughly, apart from the factor of mental excitement, proportional to the oxygen consumed for degrees of activity from a state of complete rest up to that of quietly moving about one's room or office or laboratory. With increased exertion, such as walking at a fair pace, and still more for considerable muscular efforts, the evidence from a number of lines of observation makes it certain that the second factor, the arterio-venous oxygen difference, is drawn on. The venous blood contains less oxygen during work than during rest. The character of the variations in the third reserve of the heart, the stroke volume, has long been the most important and most difficult problem of the circulation. Does the heart not only beat faster but also discharge a larger volume at each stroke when the individual is working, in comparison to the stroke volume when he is resting?

As this topic will have to be considered rather fully in the second lecture, we may leave it until then. Indeed, before we attempt to consider the answer and its significance we must first take into account certain mechanical conditions which affect the stroke of the heart.

Limits of the Stroke Volume.

One of these conditions is the capacity of the pericardial sac. It amounts to about 7 to 10 c.cm. per kilo body-weight, or a maximum stroke for each side of the heart of 3·5 to 5 c.cm. per kilo body-weight. The ventricles never, during normal activity, contract down to the obliteration of their cavities, but some blood remains in them. It is probable that during diastole they never expand to such an extent that the pericardial sac is brought taut, except possibly coincidentally with heart strain. The normal relations are shown in Fig. 2.

FIG. 2.



Measurement of the circulation and of the stroke volume was one of the chief objects of one of the greatest of the schools of physiology, that of Ludwig and his pupils and their many followers in all lands where physiology is studied. The direct results of all the work of all these investigators are, however, in respect to this particular topic, extremely meagre and misleading. If we examine critically all their data (as I had occasion to do recently in preparing a review[3] upon which I am drawing in this lecture) we find that the stroke index of the resting mammal would be of the magnitude of 0·5 c.cm. or even 0·3 c.cm. But if we calculate the volume of circulation that this would give a man of moderate size it comes to only 1 or 2 litres a minute; and if we take into account the oxygen consumed by such a person even under basal conditions in bed at complete rest, we find that such a circulation would barely carry enough oxygen, or at a stroke index of 0·3 c.cm. would not carry enough oxygen to keep him alive.

Although the results of classical physiology are thus seen to be of no validity on the great problem to which they were primarily directed, they are of immense value for the light they throw on another matter of scarcely less importance—namely, how the vital mechanism runs down to its final standstill; in other words, the process by which the great majority of men and animals die what we call "natural deaths." It is by a progressive decrease of the circulation and particularly by decrease of the stroke volume of the heart. This is the way that patients die after surgical operations—the process of shock; it is also usually the termination of acute disease. Arterial pressure is not the element of primary failure, for its controlling mechanism, the vasomotor nervous system, is functionally capable until near the end. Nor is it the contractile power of the heart that fails; for in animals under experiment and in patients nearing death, the infusion of fluid into a vein, in quantity sufficient to supply the right heart momentarily with a nearly normal volume, is responded to by the heart with beats of nearly normal amplitude. It is thus in the venous return to the heart that we find the factor that fails progressively. The heart can pump into the arterial system no more than the volume of blood that the venous return from the body supplies.

The Veno-Pressor Mechanism.

The veno-pressor mechanism is a topic at once important and difficult. Apparently the blood vascular system consists of two main parts: (1) the arteries and arterioles whose tonus is controlled by the vaso-motor nervous system, essentially as Claude Bernard defined it; and (2) the capillaries and veins. Failure of the first of these is manifested as syncope or fainting; failure of the second is what is loosely termed shock of the traumatic, toxæmic, acapnial, histamine, and other varieties.

The mechanism controlling the venous return is still obscure, but during health its activity is obviously correlated with the gaseous exchange in the tissues. When a man exercises, the production of carbon dioxide in his tissues is increased, and so also the venous pressure and the venous return are augmented. Moderate exercise, while breathing air containing 4 to 6 per cent. of carbon dioxide, induces an enormous dilatation of the veins and a very high venous pressure. Contrariwise in patients after a prolonged surgical operation under open ether anæsthesia with over-ventilation of the blood and consequent acapnia, the skin is pallid, the veins imperceptible, and the circulation much decreased. In patients in this condition inhalation of carbon dioxide in air or oxygen restores a pink colour to the skin; the veins, such as the jugular, again become visible and a full pulse and normal arterial pressure soon return.

The Meter of the Circulation.

For our present purpose the important relation is that between venous pressure and the extent to which the right ventricle is filled and distended in diastole. It is the right ventricle which acts as the meter of the circulation, while the left ventricle serves as a force pump to drive against arterial pressure whatever quantity the right measures off to it. It is probable that, whenever the left ventricle fails to pump onward easily as large a volume as the right heart sends to it, pulmonary congestion results. In fact, the relative diastolic distensibility of the two ventricles is probably the principal condition controlling and regulating the volume of blood in the lungs.

It is always necessary to be cautious and critical regarding evidence from experiments on animals under operative conditions, and particularly those on excised organs and tissues, like the perfused heart and in general toward what Haldane terms "fragments of frogs and other animals." Observations on such fragments have not the direct validity of observations on an organ or tissue when functioning normally in the whole live animal or man under real conditions. But as regards a preparation of the heart outside the body, we now have criteria for estimating whether it is acting approximately normally; it must make effective strokes of 1·5 to 2·0 c.cm. per kilo body-weight of the animal from which the heart was taken, and it must do this when supplied with blood under venous pressures no greater than those which occur in the body. The amount of carbon dioxide in the blood is an important factor in determining the diastolic distensibility of the heart.

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[3] Henderson: Physiological Reviews, 1923, iii., 165.

In perfused hearts which fulfilled these requirements, Prince and I [4] succeeded in measuring the stroke volumes of the two ventricles separately under various venous distending pressures. From zero up to slightly more than a normal resting venous pressure, the stroke volume of the right ventricle varied in proportion to the pressure. Above that pressure there was no appreciable increase of stroke volume. The left ventricle behaved quite differently. From zero pressure up to a moderate afferent pressure the cavity was not distended at all, and no blood was pumped. With further rise of the pressure (corresponding to that in the pulmonary veins) the strokes increased progressively, until at fairly high pressures the left ventricle made much larger strokes than any of which the right ventricle was at all capable. This behaviour of the left ventricle seemed to us to afford an explanation of why the lungs are never drained of all blood by an excessive activity of the left ventricle, and never in health over-distended and congested by relatively insufficient activity by the left ventricle. It adjusts its strokes automatically to the pulmonary blood pressure and thus takes no more nor less than the right heart measures to it.

Many years ago I obtained on dogs volume curves of the two ventricles together. The chest had been opened so as to allow the adjustment of a plethysmograph or cardiometer connected with a large, light, loosely-covered tambour. In Fig. 2 are shown types of such volume curves and their graduation in cubic centimetres per beat per kilo body-weight. The solid lines show the strokes at various rates of beat when the volume and pressure of the venous return were adequate and normal. The dotted lines (except the large stroke at the right) show the slow filling and decreased amplitude of beat under subnormal venous pressure.

SIZE OF THE HEART IN DIASTOLE.

It would, indeed, be a case of "bringing coals to Newcastle" for me to discuss this topic further here (at University College), where Prof. Starling, his associates, and pupils have made such extensive and valuable contributions to this very topic by means of the heart-lung preparation. As summarised by Starling in his Linacre lecture, the law of the heart defining the relation of the amplitude of stroke to the pressure and volume of the venous return to the heart is as follows: Within physiological limits the larger the stroke volume of the heart the greater are the energy of its contractions and the amount of chemical change at each contraction. In other words, the energy of contraction, however measured, is dependent upon the length of the muscle-fibres. Any increase in the extent of active surface increases the energy of change, exactly as in striated muscle. Thus the uniformity of stroke volume against varying arterial pressures, which all investigators have found, depends upon the fact that, while the first few heart-beats after a rise of pressure are slightly subnormal in amount, the consequent increase of the volume of blood in the heart calls into play greater power of contraction. In a similar way this law explains the capacity of the heart to accept widely varying amounts of blood from the venous system, and to increase the amplitude of its stroke so as to pump the whole increased volume from the venous side over into the arteries.

As it applies to the heart of a normal animal or man passing from rest into muscular activity, this general principle will need to be reconciled, as it doubtless will be, with evidence from an entirely different line of investigation—namely, observations by means of the X ray.[5] According to Bruns, in Germany, and Meek and Eyster, in America, the heart shadow is not larger during physical exercise, although the venous pressure is certainly increased over its resting value. If, then, the shadow is a reliable index of changes in the volume of the heart, we must suppose that an increase of stroke volume during physical work is effected by the ventricles contracting more completely in systole; a response for which the law of the heart also provides, although not so directly as it would if the size of the heart were increased in diastole by the increased venous pressure during muscular work.

There is another point which must be considered—namely, that the heart during its systolic contraction and diastolic expansion does not obey the law of the cube, as is usually assumed. If its shape during all phases of its activity were the same, its volume would vary as the cube, and its shadow as the square, of any linear dimension. The volume curve of the ventricles would then differ widely from the form of curve expressing the shortening of the cardiac muscle-fibres. In fact, however, it is well known that the volume curve of the ventricle (as in Fig. 2) has almost exactly the same form as the isotonic contraction curves of striated and of cardiac muscle. This fact seems to indicate that the heart does not contract and expand symmetrically in all diameters. If this interpretation is correct it adds considerably to the already difficult quantitative interpretation of the heart's X ray shadow as a measure of volume in three dimensions, from observation of the shadow which has only two dimensions.

In the volume curves of the heart (as in Fig. 2) both the systolic and the diastolic volumes are decreased, coincidently with increased tonus, during rapid rates of beat.

CONCLUSIONS.

The only adequate expression of the efficiency of the heart is one based on accurate measurement of the volume of blood that the heart pumps and upon the amount of oxygen consumed by the body. The relation between these two functions determines the arterio-venous oxygen difference, and thus determines the amount, and particularly the pressure of the oxygen-supply to the working tissues of the body. In vigorous mammals of all sizes the arterio-venous oxygen difference during bodily rest is about 3 or 4 volumes per cent.

The volume of the circulation in vigorous men and animals at rest is about 3 to 4 litres of blood per minute per square metre of skin surface. The stroke volume for animals and men of corresponding activity is a function of their body-weights not their surfaces. For all vigorous mammals, including man, the stroke index during rest is about 1·4 to 1·8 c.cm. per kilo per beat. The pulse-rate is in general proportional to to surface weight ratio and is thus in general an index of the intensity of respiratory metabolism.

The mechanical conditions of the heart's activity and its own behaviour make the right ventricle the meter of the circulation. The size of the stroke of this meter depends on the volume and pressure of the venous return. The veno-pressor mechanism is adjusted to act in relation to the intensity of the gaseous exchange of the tissues.

SOCIAL INSURANCE CONFERENCE.—This conference, organised by the League of Nations Union, was held on Nov. 23rd to 26th. An average of 300 people attended the sessions. Among the speakers were Sir William Beveridge, Sir Kingsley Wood, M.P., Miss Ellen Wilkinson, M.P., Sir Lynden Macassey, Sir Thomas Neill, Dr. Marion Phillips, Sir Henry Slesser, M.P., Sir Arthur Newsholme, Mr. Arthur Hayday, M.P., Sir Alfred Mond, M.P., and Lady Astor, M.P. Distinguished foreigners included Mr. Oudegeest, Secretary of the International Federation of Trades Unions, Signor Foscolo Bargoni, Director of Social Insurance at Rome, and Dr. Stephen Bauer, Secretary of the International Association for Labour Legislation. The proceedings and speeches have been published in book form and are on sale at the League of Nations Union, 15, Grosvenor-crescent, London, S.W. 1.

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[4] Henderson and Prince: Heart, 1913, v., 217.

[5] For literature see Henderson, Physiological Reviews, 1923, ii., 165.

THE CLINICAL ASPECTS OF ISCHÆMIC NECROSIS OF THE HEART MUSCLE.[*]

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Ischæmic necrosis, or, as named by Ziegler, myomalacia cordis, is the result of blockage of the circulation in the artery supplying the part affected. Only within comparatively modern times has it been referred to disease or obstruction in the coronary arteries; Jenner was the first to point out the connexion between angina pectoris and disease of the coronary arteries. Steven (Glasgow), writing in The Lancet of 1887, was one of the first, if not the first, to make the association of coronary disease and ischæmic necrosis. Occlusion of the coronary arteries may occur from embolism, or thrombosis, from calcification or fibrosis of the wall. If the occlusion is sudden and the patient lives long enough, the coronary arteries being functional end arteries, the area affected becomes a pale infarct, which by gradual absorption becomes a fibrous scar, and then remains a contracted or depressed portion of the cardiac wall. If the occlusion be slow it is probable that fibrous tissue replaces the muscular tissue gradually without the intervention of a stage of necrosis that could be recognised by the naked eye. Two other important events may happen in the process: first, the formation of clot on the inner aspect of the necrosis, which by normal or vigorous cardiac action may become detached, forming emboli; secondly, the heart wall may be so weakened as to induce rupture. A series of well-authenticated and adequately described cases have been collected and are set down in the accompanying table.

The cases include those in which blockage of arteries is implied by the anatomical appearances, by whatever cause; but it has been my endeavour to exclude all cases in which other lesions or processes coincident with the primary one of blockage of a coronary artery might interfere with the symptoms due to the local condition in the heart, such as septic embolism, syphilis, fibrosis from causes not clearly due to arterial ischæmia, such as rheumatic. Though an extensive survey of the literature has been made the cases here set down are samples rather than an exhaustive collection. Also all consideration is omitted of occlusion of the very small arteries which may give rise to minute patches of fibrosis.

In so far as blockage of arteries may be the result of many causes, ischæmic necrosis is not confined to one period of life; the youngest case I have found was a man of 23 reported by Osler[1] in 1891. In one of my own series of post-mortems, a female aged 25, who showed hysterical symptoms following an attack of influenza, died suddenly, and was found to have thrombosis of her pelvic veins and an embolus of a coronary artery with typical ischæmic necrosis. But the larger number of cases met with are the result of the arteriosclerotic lesions, and it really therefore becomes a study of the senile heart.

The branches of the right and left coronary arteries are relatively constant in their distribution, and seeing that different parts of the heart have a different function, it might be thought that diagnosis of lesions of the various branches might be possible during life. Deductions of the site of the lesion in the heart from the symptoms are very unreliable.

There have been many attempts to classify the effects of occlusion of the coronary arteries or their branches, whether such be identified from actual blockage discovered in the artery, or from its effects—ischæmic necrosis or fibrosis. Sudden death was one of the first effects to be recognised by Wilks and Hale-White; then was added chronic cardiac failure, and if we exclude the work of Jenner and of Allan Burns, angina pectoris. But this classification by no means exhausts the possibilities, and in the list of cases abstracted a few extra groups are added, but this obviously does not complete the symptom groups which may appear.

Pathology and Symptomatology.

It is evident from these cases that there is no constancy in the effect of occlusion of various branches. In one case *occlusion* of the *anterior branch* of the left coronary produces *sudden death*, in another *angina*, in another *chronic* cardiac failure, in another no symptoms at all; in one of these latent cases in which ischæmic necrosis was discovered after death, a careful inquiry into the history of the patient revealed no hint of any illness or temporary disability in which occlusion might have taken place, nor any evidence of cardiac failure. If we omit Mackenzie's Case 7 of angina pectoris with pain in the abdomen, all the other cases of angina were the result of blockage of the anterior branch of the left coronary. Most of the cases of sudden death will be seen to show cardiac fibrosis without other evidence for acute cardiac failure. Very recent ischæmic necrosis is liable to be missed in the presence of a large fibrous lesion. If ischæmic necrosis has occurred in one artery it is likely to occur in another, and in one case I have observed there was fibrosis and very recent ischæmic necrosis in the neighbourhood. Other changes might also be present, such as a sudden implication of the bundle system. There appears to be no relation between the size of the lesion and the severity of the symptoms.

One case, No. 38 in the table, deserves a more extended description in so far as he was attended by me for several years, and the symptoms of the patient during life could be referred to the cardiac lesions found.

He was a clergyman, and had led a very strenuous athletic though healthy life as a schoolmaster. In December 1915, when aged 64, he was seen following a fainting attack there were then no signs of disease and after a few days rest he was about again. These recurred at long intervals In January, 1917, he took ether well for the removal o a rodent ulcer of the pinna. In June, 1918, when aged 67 he had a fainting attack while riding a bicycle and had t be brought home in a cab. Seen immediately he was pale collapsed, slightly hyperpnœic, and restless, with a puls that was irregular in rhythm, tension, and volume. I mad the diagnosis of coronary artery disease, took a serious vie of the outlook, and suggested a very careful life with stric limitation of exercise. Sir William Osler saw him with m and with greater clinical wisdom, as he appeared to b recovering, suggested exercise in moderation and discon tinuance of his usual morning run. He made a rapid recover and was about his work in ten days. From that time h suffered from no serious illness until in May, 1923, havin breakfasted in his usual health, he was found dead in th afternoon, having died suddenly.

The heart showed a large patch of fibrosis, obviously th result of ischæmic necrosis, in the posterior part of th interventricular septum and the posterior ventricular wa in the field of the right coronary artery, and a very recen patch of ischæmic necrosis, in the same arterial field, in th septum. The main coronary arteries were patent bu atheromatous, and there was marked atheroma of the aort There was no evidence of syphilis. It can scarcely b doubted that the old healed cardiac lesion is the evidenc of the cardiac attack in 1918 which kept him in bed for ove a week, and, this being granted, the subsequent history evidence of complete restoration of cardiac function aft the attack.

Only three of the cases in the table show evidenc of embolism elsewhere; when, however, we see th deposition of clot on the inner aspect of the heart wal we cannot be in doubt as to the frequency in thes cases of embolism. Embolism of a cerebral arter causing hemiplegia might be very misleading if were the first symptom of ischæmic necrosis. Th same is true in my case (No. 30) of embolism of a mesenteric artery that was sent to a surgical ward. I would go so far as to say that an affection of the heart in elderly persons with cerebral symptoms is presumptive evidence of ischæmic necrosis. The following case will illustrate what I mean, but unfortunately I have no post-mortem evidence.

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[*] This paper embodies a discussion introduced by the writer at a recent meeting of the Cardiac Club, together with certain case reports which have been kindly supplied by some of its members—viz., Dr. John Cowan, Prof. F. R. Fraser, and Dr. K. D. Wilkinson. The cases contributed by Dr. Carey Coombs will appear later in a separate paper.

[1] Trans. Path. Soc., Philadelphia, 1891, xiv., 125.

A farmer of 70, previously healthy and busy in his work, one morning on going into the bathroom to wash, felt faint and a pain came on in the left groin. His doctor found a lump there and sent him to a surgeon. Two days after the left leg was very much swollen, blue, colder than the right leg, and there was some rigidity in the left iliac fossa. There was marked pulsation in the lower part of the abdomen below the umbilicus, but no pulsation in the arteries of the left foot. The heart was overacting, causing at each systole movement of the whole chest and part of the abdomen. There was some dilatation; no murmurs were heard over the heart, but a systolic murmur and the second sound was heard over the whole of the abdomen. Two days after this there was some difficulty in passing urine, and he died suddenly after an epileptic seizure affecting the left side of the body, probably an embolism.

In a recent paper[2] McNee has drawn attention to several features of ischæmic necrosis and reports two cases. The pain when present is constant and of long duration; it may be præcordial, behind the xiphisternum or in the right or left quadrant of the abdomen; it may simulate perforated gastric or duodenal ulcer, gall-stone colic or acute pancreatitis. He describes the facies of the patient during the attacks of abdominal pain as that of anxiety, of an earthy colour with some cyanosis, comparable to shock, but persisting long after the pain and distress have subsided. Pericardial friction is an important physical sign: and there is frequently a polymorph leucocytosis.

Diagnosis.

How are we to detect this lesion? The first requisite is a clear knowledge of the *anatomical process*, and to have it in mind in approaching a cardiac case in any person over 40. We ought, I think, to be secretly ashamed if we are reduced to diagnose mitral regurgitation or cardiac dilatation or even auricular fibrillation without a hint of ætiology. We are most likely to be right in a diagnosis of ischæmic necrosis in angina if we take care to exclude certain obvious possibilities such as aneurysm. *Chronic cardiac failure in old people* in the absence of syphilis, old rheumatic affections of the heart, and pernicious anæmia is almost certainly due to ischæmic necrosis. *Chronic cardiac failure plus evidence of aseptic embolism* makes the diagnosis of ischæmic necrosis practically certain.

The pulse gives help occasionally. Mackenzie has noticed in two of his cases pulsus alternans; one of my cases had fibrillation, another, at the time of the nitial lesion, irregularity in rhythm and volume probably due to fibrillation. The pulse has been recorded both fast and slow. The pulse, therefore, may give some import of cardiac failure, but can give nothing else.

The first sound of the heart is frequently poor in quality or even absent. The electrocardiogram has been explored as a means of getting greater accuracy. Carter drew attention to the direction of the notched R waves, which were found to be opposite in leads 1 and 3, and to the T wave being in direction opposite to the initial peaks, giving it he name arborisation block. The very careful report with electrocardiograms of Drury in *Heart* as proved that these results of Carter are not invariable, and in this Drury's results are in keeping with experiments on the dog's heart. A current aper by Cowan and Bramwell[3] is highly suggestive hat bundle branch block is frequently present in hese lesions.

Though much work has been done and many xcellent cases are on record, I venture to think that there is an enormous field still for the study of cardiac ymptoms and their correlation with anatomical sions.

Clinical Records: Dr. John Cowan's Cases.

CASE A.—J. S., male, aged 51 (19/7/24–24/7/24). Gradual and increasing cardiac failure, pain in the lower chest and upper abdomen at first. Aneurysm of left ventricle involving apex, inter-ventricular septum, and anterior wall. Fibrosis, thrombosis, pericarditis.

His ill-health only dated back to December, 1923, when he first began to suffer from pains in the upper part of the abdomen and discomfort over the chest. He stopped work for a week and then continued at work until the end of the year. In January a cough ensued and he was not able to resume work after the holidays, as he was short of breath. In February he had a double pneumonia. In March his feet became swollen and all his symptoms were exaggerated.

On admission he was very ill, with œdema extending as high up as the chest, the right leg being more swollen than the other parts. The swelling ceased at Poupart's ligament, and its appearance suggested an inflammatory condition superimposed upon œdema. He was very short of breath, and orthopnœic. Cheyne-Stokes breathing was present at night. There were râles at the bases. The heart was slightly dilated, the sounds weak but apparently pure. The arteries were notably sclerosed, but the fundus of the eye seemed normal. The urine contained albumin in large amount. The blood pressure was about 150 max., 105 min. Pulse, quite regular, about 100. There were old scars on the left tibia which was thickened, sepsis having obtained for many years in early life. Death ensued five days after admission.

Post-mortem examination showed an aneurysm of the left ventricle involving the apex, the interventricular septum, and a portion of the anterior wall, with extensive deposits of recent and mixed thrombus in the interior. The ventricular wall round the aneurysm was notably fibrous. The apex and the adjacent part of the anterior wall were definitely bulging, and over this was subacute pericarditis. The aortic valves showed some diffuse thickening, the other valves were normal. The aorta showed a few patches of atheroma and marked arteriosclerotic changes. The coronary arteries showed extreme atheromatous changes, and the left was plugged with a recent thrombus. Interstitial nephritis was present. A firm cicatrix involved the right iliac artery and vein at the point where the ureter crosses them. The artery above this was dilated. The vein was filled with old and recent clot up to this point.

CASE B.—G. T., male, aged 39 (9/9/19). No cardiac symptoms, sudden cerebral hæmorrhage; recent ischæmic necrosis of anterior wall of left ventricle.

A history of a weak heart, but he was working regularly, and apparently in his usual health. He suddenly dropped down unconscious, and was admitted into hospital with a hemiplegia and in coma. He died a few hours afterwards.

Post-mortem examination showed a ruptured aneurysm of the left middle cerebral artery, a small grey tumour close to the septum lucidum on the left side, congenital cystic kidneys with a tuberculous mass in one, tubercle of lungs and the heart. This was slightly enlarged chiefly on the left side, with a very early softening involving a large area of the anterior wall of the left ventricle. No cause for this was apparent. There was only slight atheroma of the aorta and the large vessels in the abdomen. Another unruptured aneurysm in the anterior communicating vessels in the circle of Willis.

CASE C.—R. A., male (11/8/15). Chronic cardiac failure; area of extreme fibrosis in anterior wall of left ventricle related to a branch of right coronary artery.

In good health till the December preceding admission. He then became short of breath and his feet became swollen. Admitted with great dyspnœa and œdema. Pulse 120, of poor quality and irregular. Cardiac sounds were distant but probably pure. Ascites and pleural fluid. Albuminuria marked.

Post-mortem.—A large heart, the right ventricle being markedly hypertrophied. There was a large area of extreme fibrosis of the front of the left ventricle with great thinning of the area from which the papillary muscles sprung, with marked atrophy of the papillary muscles. This was related to extreme patchy atheroma of the *right* coronary artery. The aorta was almost completely free from atheroma save around the orifice of the coronary arteries. Valves normal. Subacute parenchymatous nephritis.

CASE D.—J. H., aged 63 (27/7/13). Sudden, followed by chronic, cardiac failure; infarction of lower two-thirds of left ventricle; local adherence of pericardium, occlusion of left coronary.

On June 5th, 1913, when climbing up a gangway into a ship he suddenly became very breathless and had to stop. His fellow workmen pulled him up to the deck and he soon felt better, but he went home and stayed in the house for four days. As he then felt quite well he resumed his work, but at once became short of breath and was only able to continue at work for a couple of days. He went to bed, as his feet and legs were now swollen. The breathlessness became worse and he had to sit up in bed. He was restless and slept but little. A few days later he began to experience pain in the region of the heart, and all his symptoms increased in severity. On June 25th he spat up a considerable amount of blood, and the hæmoptysis continued.

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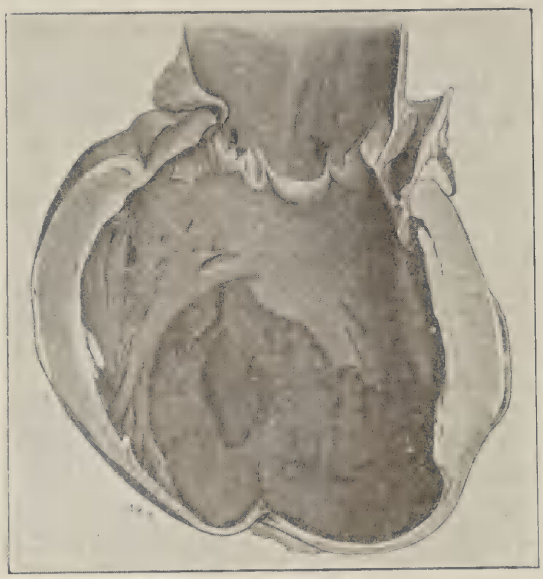
[2] Quart. Jour. Med., Oxford, 1925.

[3] Ibid.



Case D.—Aneurysmal dilatation of left ventricle involving septum and posterior wall.

On admission he was collapsed, cyanosed and cold, and semi-conscious with shallow breathing which came in gasps. His pulse, 75, was regular and of moderate pressure. Next morning he was rather better, but the extremities were still blue and cold. The breathing was regular and more full but noisy. Pulse 60, small, and of moderate pressure. Apex in fifth space underneath the nipple. Cardiac sounds distant and indistinct. Œdema extended on to the trunk. Liver enlarged and tender. Dullness and râles at the bases. Emphysema. Next day he had rallied to some extent, but he was still very breathless and the hæmoptysis continued. No notable change occurred, but on July 7th he was rather restless and died suddenly.

Post-mortem (see figure).—The lower two-thirds of the left ventricle was softened from an infarction, the edges of which were pale. At the leftmost part of the apex the wall was only about $\frac{1}{8}$ in. thick, but there was no perforation. The area involved bulged slightly, and the pericardium was adherent, with fibrinous exudate at the edges. Valves normal. Slight superficial atheroma in patches on the aorta. The left coronary artery was occluded by a dense, thick, atheromatous patch $\frac{3}{4}$ in. in extent, situated about 1 in. from the orifice and extending down to the infarct.

Case E.—W. B., male, aged 61 (31/5/21–9/6/21). Angina pectoris. Numerous small infarcts in lower two-thirds of left ventricle, including septum. Syphilitic aortitis.

His illness commenced about the spring of 1917, when he first began to experience pain in his chest when on the way to work in the morning. It had usually ceased when he started work and he paid little attention to it, as he thought that it was due to indigestion. In September, 1917, it became more acute, and he had to seek admission into hospital. The pain at first was situated low down in the chest, but subsequently extended upwards and into the left armpit and left arm. At first the attacks were of short duration, a minute or two, but they were so severe that he had to stop dead until they passed away. In February,

CLINICAL TYPES OF ISCHÆMIC NECROSIS.

Sudden Death.

No.	Author and reference.	Sex.	Age.	Symptoms.	Heart.
1	Fagge.[1]	M.	85	Sudden death.	Fibroid apex and anterior part of septum.
2	Do.	M.	61	Dyspnœa, giddiness. Sudden death.	Fibrosis of field of anterior branch of left coronary. Local dilatation.
3	Hale-White.[2]	M.	40	Sudden death.	Large fibrous mass in posterior wall of ventricle.
4	Do.	M.	43	Large heart. Sudden death.	Septum of ventricles white and fibrous.
5	Do.	M.	—	Dilated heart. Sudden death.	Apical half of left ventricle fibrous; also elsewhere.
6	Butlin.[3]	—	—	Sudden death.	Fibrous patch of interventricular septum; thrombosis of brachial, hepatic and superior mesenteric arteries; gangrene of duodenum.
7	Green.[4]	M.	52	Sudden death.	Fibrosis of interventricular septum.
				Angina.	
8	Herrick.[5]	M.	55	Pain in lower chest; vomiting; rapid heart failure; lived 52 hours.	Thrombosis of descending branch of left coronary.
9	Do.	M.	65	Præcordial pain; falling B P. Later dyspnœa and dropsy; lived 2 weeks.	Thrombus of descending branch of left coronary.
10	Do.	M.	42	Sudden violent pain lower sternal region, arms, and epigastrium. Collapse. About again in 10 days. Dyspnœa and cyanosis. Sudden death.	Area of descending branch of left coronary fibrosed, and descending branch of left circumflex.
11	Peacock.[6]	M.	60–70	Dyspnœa and substernal pain some weeks.	Fibrosis of anterior wall of left ventricle more marked below.
12	Obrastzow and Straschesko.[7]	M.	49	Substernal pain, cyanosis, feeble heart. Sudden pain sternum, neck, and head.	Thrombosis of left coronary.
13	Do.	M.	57	Substernal pain, cyanosis, Cheyne-Stokes breathing.	Thrombosis of left coronary.
14	Do.	M.	57	Substernal pain and down left arm, Cheyne-Stokes breathing.	Thrombosis of left coronary.
15	S. West.[8]	—	40	Extreme spasmodic pain in præcordium.	Fibrosis of base of left ventricle.
16	Mackenzie.[9]	F.	57	Increasing pain in chest, at first paroxysmal: slight breathlessness might precede pain.	Ischæmic necrosis and fibrosis in field of descending branch of left coronary.
17	Do. Case 2.	M.	64	Angina of effort. Breathlessness. Sudden death.	Ischæmic necrosis in field of septal branch of anterior branch of left coronary artery.
18	Do. Case 4.	F.	60	Angina of effort. Pain in left forearm.	Fibrous changes in muscle of left ventricle; calcification of coronary arteries.
19	Do. Case 6.	M.	48	Angina of effort. Pain chest, neck, and jaw —sometimes arm.	Small aneurysm of left ventricle. Rupture of heart.
20	Do. Case 7.	M.	52	Breathlessness on walking and pain in stomach.	Aneurysmal dilatation of right ventricle containing clot.
21	Do. Case 10.	M.	46	Shortness of breath 2 years and pain 1 year before death on walking. Pulsus alternans 1 week before death.	Fibrosis in field of anterior branch of left coronary artery.
22	Do. Case 11.	M.	48	Pain in præcordium and left arm, with breathlessness brought on by effort. Irregular rhythm.	Fibrosis in field and obliteration of anterior branch of left coronary artery, septum, and left ventricular wall.
23	Do. Case 21.	M.	57	Weakness and breathlessness on exertion. Later attacks of angina. Pulsus alternans.	Apical half of left ventricle dilated and fibrosed.

1918, he was able to resume work, at which he continued till April, 1921, when the pain became more severe and more constant, preventing him from sleeping, and even awakening him from sleep at times.

The pain at the time of admission was dull and heavy, and commenced in the axilla and shot inwards to the lower end of the sternum. At first the pain commenced in the thorax and spread to the arm. An attack might last for three hours. It did not invariably involve the arm. The attacks occurred every day and even several times in the day. During his residence many attacks were observed. His breathing became frequent, and he became restless and sat up in bed, with his shoulders bent forwards. The pain did not appear to be very severe. During these attacks the abdomen was always distended and tight, and relief followed the movement of the bowels or the passage of flatus. We formed the impression that the attacks were abdominal in origin though he said that the pain was thoracic. He was not talkative during these attacks, but sighed frequently and perspired freely. Well-marked paralysis agitans. A mitral systolic murmur was present and a diastolic aortic murmur. Blood pressure 145–60 mm. Hg. Temporal, brachial, left facial, dorsalis pedis, femoral arteries were all palpable and tortuous. Retinal arteries narrowed and thickened. There was some œdema. After admission the attacks continued. On June 7th his temperature rose to 101° F., the pulse to 100, and the respirations to 32. He was sick on several occasions. *The pain at this time was constant*, and his general condition rapidly deteriorated. He died from cardiac failure.

Port-mortem examination showed numerous small infarcts over lower two-thirds of left ventricle and adjacent septum. Recent pericarditis. Advanced syphilitic aortitis, nipping the orifice of the left coronary artery, the lumen of which was obstructed a few millimetres below. The branches showed gross lesions. The right artery was pervious though notably atheromatous. The renal and mesenteric arteries showed numerous thickened patches, and the kidneys many arterio-sclerotic scars. Mitral valve normal; aortic thickened.

A very instructive case. The diagnosis of angina seemed clear and its gastro-intestinal origin, but the patient's neurotic tendencies and his excessive complaints made the real question difficult to solve. The appearance of *constant* pain and friction made the whole thing clear.

CASE F.—Mrs. B., aged 45 (30/1/22–8/2/22). Acute abdominal symptoms with collapse, localised infarct of left ventricle with ball thrombus.

Admitted on account of severe pain in the abdomen on the left side with collapse. Multipara. Her last baby was born

CLINICAL TYPES OF ISCHÆMIC NECROSIS—(*Continued*).

Chronic Heart Failure.

No.	Author and reference.	Sex.	Age.	Symptoms.	Heart.
24	Fagge.[10]	M.	69	Dyspnœa and dropsy for 7 weeks.	Posterior wall of left ventricle very thin; replaced by fibrous tissue.
25	Do.	M.	42	Dyspnœa and dropsy; rheumatic fever 19 years previous.	Posterior wall of left ventricle completely fibrous.
26	Do.	M.	43	Dyspnœa 2 months after cholera; dropsy 10 months after. Death 14 days after onset of dropsy. Sudden death.	Septum and adjacent anterior parts of left and right ventricles converted into fibrous tissue.
27	Writer's observation.	M.	49	Dyspnœa 5 months. Dropsy 1 month; fibrillation.	Fibrosis of tip of left ventricle and recent ischæmic necrosis of posterior papillary muscle.
28	Bristowe.[11]	F.	39	Dyspnœa and some dropsy; irregular pulse.	Extensive fibrosis lower anterior portion of heart including part of septum.
29	Mackenzie.[12]	M.	72	Hemiplegia followed by hæmaturia, shortness of breath, pulsus alternans, cardiac asthma, dropsy.	Intense fibrosis, with ante-mortem clot internally, at apex of left ventricle.

Abdominal Symptoms and Collapse.

No.	Author and reference.	Sex.	Age.	Symptoms.	Heart.
30	Writer's observation.	M.	64	Abdominal pain and vomiting 5 days, followed by 2 days of absolute constipation.	Old fibrosis in area of anterior branch of left coronary; embolism of superior mesenteric artery.
31	Writer's observation.	M.	46	Angina of effort some months; 24 hours diarrhœa, vomiting, and collapse.	Fibrosis of field of anterior branch of left coronary artery, calcification and occlusion.
32	Samuelson.[13]	M.	47	Diarrhœa, vomiting, and collapse. Pulse 35.	Sclerotic narrowing of both coronaries.
33	Hammers.[14]	—	—	Collapse. Pulse 40.	Right coronary thrombosed.
34	Gallavardin et Dufont.[15]	—	—	Collapse. Very slow pulse.	Embolism of coronary artery.
35	Faulkner, Marble, and White.[16]	M.	60	Repeated attacks of severe pain upper abdomen.	Occlusion of a branch of descending left coronary artery with infarct of left ventricular wall.
36	Do.	F.	55	Severe pain in right lower chest and right upper abdomen. Operation for gallstones proposed.	Occlusion of right coronary artery and partial of descending branch of left.
37	Hardt.[17]	M.	66	Pain lower chest, intermittent nausea, and vomiting followed by fibrillation.	Old thrombosis of left coronary artery with myomalacia cordis, aneurysm, and mural thrombosis.

Fainting Attacks.

No.	Author and reference.	Sex.	Age.	Symptoms.	Heart.
38	Writer's observation.	M.	72	Fainting attacks at rare intervals, one with collapse and irregular pulse. Sudden death.	Old fibrosis in field of right coronary artery. Recent ischæmic necrosis of septum, also in field of right coronary artery.

Delirium and Failing Pulse.

No.	Author and reference.	Sex.	Age.	Symptoms.	Heart.
39	Writer's observation.	M.	83	Sudden delirium; dyspnœa, failing pulse. Three days' illness.	Obliteration of anterior branch of left coronary.

No Cardiac Symptoms.

No.	Author and reference.	Sex.	Age.	Symptoms.	Heart.
40	Fagge.[18]	M.	66	No cardiac symptoms. Renal cancer.	Fibrosis of posterior wall of heart.
41	Do.	M.	55	No cardiac symptoms. Gangrene of foot; gradual asthenia.	Fibrosis of posterior wall of left ventricle. Local pericarditis over softening.
42	Writer's observation.	M.	76	Had undergone prostatectomy 3 weeks before death from strangulated hernia.	Healed patch of fibrosis near apex of left ventricle; anterior branch of left coronary was completely obstructed.
43	Writer's observation.	M.	—	Carcinoma of rectum. Colostomy. Sudden death.	Calcification of both coronaries; ischæmic necrosis of left ventricular tip; aneurysmal dilatation rupture into pericardium.

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[1] Tr. Path. Soc. Lond., 1874, xxv., 64.
[2] Ibid., 1884, xxxv., 114.
[3] Ibid., 1880, xxxi., 76.
[4] Ibid., 1874, xxv., 47.
[5] Jour. Amer. Med. Assoc.. Chicago, 1919, i., 387.
[6] Tr. Path. Soc. Lond., 1854, v., 96.
[7] Ztsch. f. Klin. Med. Berlin, 1910, lxxi., 116.
[8] Tr. Path. Soc. Lond., 1884, xxxv., 119.
[9] Angina Pectoris, Lond., 1923, Case 1.
[10] Tr. Path. Soc. Lond., 1874, xxv., 64.
[11] Ibid., 1855, vi., 148.
[12] Angina Pectoris, London, 1923, Case 22.
[13] Wiener med. Wchnschr., 1878, No. 5.
[14] Ibid., 1878, xxviii., 98.
[15] Lyon Méd., 1913; Abstract in Arch. des Maladies du Cœur, 1914. vii., 406.
[16] Jour. Amer. Med. Assoc., Chicago, 1924, lxxxiii., 2080.
[17] Ibid., 1924, lxxxii., 692.
[18] Tr. Path. Soc. Lond., 1874, xxv., 64.

eight months before, and since then she had had symptoms of renal and cardiac disease. General œdema, &c., bronchitis, emphysema. Cardiac sounds pure but weak and distant. Steady deterioration. Infarct of lungs on Feb. 4th.

Post-mortem. — Hypertrophy and dilatation of left ventricle. A ball-shaped clot at the apex probably related to a myocardial infarct which, however, did not extend through the whole depth of the muscle. Right heart much dilated, with clots in auricle. Infarcts in spleen and lungs. Interstitial nephritis. Thoracic aorta was fairly normal, but the abdominal aorta and the splenic artery were grossly diseased. The valves were very slightly thickened.

CASE G. — Mrs. F., aged 65 (24/10/07–27/10/07). Gradual cardiac failure; obliteration of right coronary artery, aneurysm of posterior wall of left ventricle.

A history of palpitation for some years. Œdema of the feet occurring about 12 months before admission, with shortness of breath, and becoming marked three weeks before admission. The œdema became excessive and the legs burst, with numerous small sores on the left leg which had become septic.

On admission anasarca marked, with great dyspnœa and cyanosis. Slightly delirious. Albumin abundant. A mitral murmur was present, and the pulse was irregular. On Oct. 27th, 1907, the patient died in a sudden syncope.

Post-mortem examination showed a large heart weighing 23 oz. The main branch of the right coronary artery was practically obliterated, and an aneurysm had formed on the posterior wall of the left ventricle about the junction of the upper and middle third. The wall was fibrosed, and no muscle cells were visible to the naked eye on section. The endocardium was much thickened. The aortic valves were thickened, with an acute endocarditis superimposed. The mitral was thickened The splenic and renal arteries were sclerosed. Interstitial nephritis. The acute endocarditis was probably secondary to the sepsis in the legs.

CASE H.—J. M., male, aged 62 (30/9/24–2/10/24). Gradual cardiac failure; diffuse early fibrosis of myocardium.

About 18 months before admission he began to feel short of breath and unfit, and had to give up his work. On July 24th his feet became swollen. On Sept. 30th, 1924, he collapsed with Cheyne-Stokes breathing. The heart was large with a mitral systolic murmur and distant poor sounds elsewhere. Pulse about 100, regular, and of fair volume, with blood pressure 147 max., 100 min. The chest was practically clear. No improvement ensued and he died suddenly.

Post-mortem examination showed a large heart, 32 oz., with a few patches of old pericarditis on the surface. The aortic valves were slightly thickened. The other valves were normal. The myocardium showed diffuse early fibrosis, the aorta and the coronary arteries showing arterio-sclerotic changes.

Prof. F. R. Fraser's Cases.

CASE I.—W. C., aged 65 (7/7/24–7/9/24). Abdominal angina; ischæmic necrosis of a large portion of the left ventricle and a portion of the right.

History.—Increasing shortness of breath for preceding two years. Attack of dyspepsia three months previously. On morning of July 5th woke up with acute pain in epigastrium and upper abdomen. Very short of breath, increasing cough and cyanosis. During the 6th pain and dyspnœa increasing and restlessness marked.

On examination: A short, stout man, cyanosed and in pain, giving a muddy complexion, very great difficulty in breathing. Temperature 98·6° F., pulse 130, respirations 40. Thorax moving very poorly and jerkily; air entry poor, breath sounds vesicular with prolonged expiration; rhonchi, sibili, and râles at both bases, especially right. Position and size of heart could not be made out with any accuracy because of emphysema and the noisy respiration. Heart sounds judged to be both very feeble. No irregularity. No œdema of subcutaneous tissues. Abdomen distended but moving well, no localised rigidity or tenderness. Liver enlarged, edge felt 2 in. below costal margin. Urine: Sp. gr. 1026, trace of albumin and of acetone. Nervous system: Nothing abnormal found except that left ankle-jerk could not be elicited.

July 8th: In early morning noticed to be not moving right arm and right leg, and on examination it was found that there was a weakness of right face also. The arm-jerks were present and equal; the right knee-jerk and right ankle-jerk were brisker than the left, and the plantar response on the right was extensor. No improvement occurred with administration of oxygen. Morphine and adrenalin were given hypodermically without improvement. Temperature rose to 100·8°, pulse 160, and death occurred in morning of the 9th.

Post-mortem Examination. — Lungs congested and œdematous. Gastric ulcer, chronic, 2 in. above pylorus. Embolus of branch of left middle cerebral artery and subcortical area of softening. Cardio-vascular system: A small amount of turbid fluid was present in the pericardium, and some recent lymph present on anterior surface of heart. Subpericardial hæmorrhage over the left auricle. Right auricle considerably dilated and hypertrophied. Tricuspid orifice admitted four fingers. Valve was slightly opaque and a hæmorrhage present on anterior cusp. Left auricle hypertrophied. Mitral orifice admitted three fingers, valve thickened, but no stenosis. Left ventricle markedly dilated and somewhat hypertrophied. Pulmonary veins appeared normal. Aortic valve somewhat thickened, and ascending part of aorta showed some fatty changes. Remainder of thoracic aorta was involved extensively in an ulcerative atheroma. Coronary arteries thickened and the posterior interventricular branch was filled with an embolus. Musculature of the left ventricle almost entirely involved in acute softening, with the presence of small hæmorrhages into the substance of the muscle. On the inner surface the appearance was of a yellowish necrotic change. A considerable but much smaller portion of right ventricle showed the same change.

Histological Examination by Sir Bernard Spilsbury.—Heart muscle teased in osmic acid—large irregular deposits blackened with osmic acid in most of the muscle cells. These deposits resemble lipoids developing in putrefaction. They are probably due to myomalacia. Ordinary preparations show numerous areas of recent myomalacia scattered throughout the myocardium. In these areas the muscle cells have partly lost their nuclear staining properties, but the cells are not distinguished. These areas are markedly infiltrated by polynuclear cells, and in some parts there are also hæmorrhages. The endocardium over these areas is infiltrated with polynuclear cells, and thrombi adhere to the inner surface of the heart. The thrombi are laminated, the laminæ being chiefly fibrinous with layers of red clot; some of the laminæ are markedly infiltrated with polynuclear cells. There is also some polynuclear cell infiltration of the epicardial fat adjacent to areas of myomalacia, and there are hæmorrhages in this tissue. No organisms seen. No changes in blood-vessels of heart to account for myomalacia.

Dr. K. D. Wilkinson's Cases.

CASE J.—A. C., aged 50 (3/11/24–6/11/24), under Dr. W. H. Wynn. Angina pectoris, occlusion of left coronary, infarction of left ventricle.

He was admitted complaining of burning stabbing over præcordium. He had severe attack of angina on admission. Accentuated second sound aortic area. Apex beat sixth space, 4 in. from mid-line. Friction rub heard over left lower lobe anteriorly, probably pleural in origin. Pain radiated but little and was confined to præcordium. He was an elderly, powerfully-built man of the ruddy type, obviously older than his years, but at a first glance did not look very ill. He was sitting in a chair, leaning slightly forward, and rather pale. A closer inspection showed that he was slightly cyanotic. The striking thing about him was his immobility; he would hardly move a limb, and in talking spoke very quietly and slowly. He moved his eyes rather than his head.

He said that he had had attacks of præcordial pain for some months, but these had never been very severe, and had always passed off pretty soon; but this attack had come on two days previously and had remained severe ever since the beginning. There were times when the pain was easier, and times when it was of the greatest intensity, but it was so bad all the time that he was unwilling to talk, dared not move, and had hardly had anything to eat since it began. Amyl nitrite hardly had any effect in the out-patient room, and during the three days he lived after admission he had a great deal of pain and died in an exacerbation. Morphine seemed the most effective drug, but was never able to abolish the pain. The pulse was steady, rather slow, poor in volume, and the vessel wall was thickened. There was no palpable pressure abnormality (he was obviously too ill for the pressure bag).

Post-mortem.—A muscular well-nourished body. Pericardial sac: Adhesions, old standing, were present towards the base of the heart and at the apex of the right ventricle. The præcordium covering the front of the right ventricle was thickened and opaque.

A delicate layer of recent fibrinous exudate covered practically the whole of the left ventricle. The left ventricle was somewhat dilated. There was a large mass of pale thrombus entangled amongst the columnæ carneæ at the apex. Practically the whole of the lower two-thirds of the left ventricle was infarcted, the muscle having a dull, opaque, greyish-white appearance with irregular areas of congestion. The aortic valve segments were slightly thickened and there was a delicate layer of recent thrombus along the lines of contact of the cusps. The first part of the aorta was considerably dilated and showed an extreme degree of atheromatous thickening and was narrowed to an extreme degree, so that it only admitted the point of a dissecting needle. A small plug of pale thrombus completely occluded this greatly narrowed orifice. The artery itself showed only a few patches of atheroma. No gross lesion was found in the auricles or right ventricle. The dilatation of the aorta extended as far as the beginning of the descending portion, and in addition to the atheromatous changes described there were many areas of pearly white thickening of the intima and scarring of the endothelium, the appearances being those of a syphilitic mesaortitis. The rest of the aorta showed irregular patches of atheroma. Both lungs showed hypostatic congestion and extreme generalised œdema. Peritoneum: normal. Liver: 2200 g.; showed early chronic venous congestion and some fatty infiltration. Spleen: 125 g.; rather atrophied, and the pulp was distinctly fibrous. Kidneys: 430 g.; showed some recent œdema and congestion; the vessels were somewhat thickened.

CASE K.—W. G., aged 61 (7/6/25–11/6/25), under Dr. L. G. Parsons. Acute attacks of collapse, angina. Thrombosis of the main trunk of the left coronary. Infarction of the apical portion of the left ventricle. Pneumonia—right apex. Chronic venous congestion of all organs.

The illness began with a sudden sharp attack of collapse, but he did not lose consciousness; was breathless. There were previous attacks many years ago. No recent illnesses. Bowels free. He was admitted cyanosed, pulse-rate 62, poor in volume. Pain at left base anteriorly, pleuritic rub at right base posteriorly. Otherwise no physical signs. On June 10th, 1925, the patient had an attack of palpitation with a feeling of suffocation. Diagnosis: Angina pectoris.

Post-mortem.—The body was that of a well-built, elderly man. The lungs were prominent, due to hypertrophic emphysema. To a large extent they obscured the cardiac area. The peritoneal cavity was normal. Heart (500 g.) and pericardium. On opening the pericardium a little turbid fluid was seen, and fibrinous adhesions attached the pericardium to the apex and anterior aspect of the left ventricle. These were easily broken down, and the heart muscle underneath them was very firm in consistence and presented a mottled appearance of infarction. On opening the left ventricle (which was hypertrophied and dilated), the area of infarction could be distinctly seen extending right through the heart muscle, and to the internal surface of this area a quantity of antemortem thrombus was adherent. The interventricular septum did not appear involved in the infarction, although it was of wide extent, involving the whole of the apical portion of the heart. Some areas of the infarct showed the condition of "myomalacia cordis." There was some fibrosis of the papillary muscles. The left coronary, which showed advanced atheroma with much narrowing of its lumen, contained a mass of thrombus about 1½ in. from its origin. This was formed upon a calcified patch. The right coronary was very atheromatous but was not thrombosed. The orifices of the coronaries were somewhat narrow. The aorta was very atheromatous. The orifices of the intercostals were narrowed and there were two patches of atheromatous ulceration, over one of which the intima had given way completely so as to produce a commencing dissecting aneurysm. Lungs: Left upper lobe was consolidated and completely airless. The left base was œdematous. Right: Upper lobe partly consolidated. Liver: 1700 g.; chronic venous congestion. Kidneys: 380 g.; chronic venous congestion. Spleen: 160 g.; chronic venous congestion. Radial artery was almost normal in appearance and the vessels of the kidneys were the same.

NATIONAL MEMORIAL TO QUEEN ALEXANDRA.—This memorial is, with the sanction of the King and Queen, to take the form of an augmentation of the resources of Queen Victoria's Jubilee Institute for Nurses, of which Queen Alexandra was the patron. Under the charter of the Institute the Queen succeeds to that position. All the affiliated nursing institutions will be given the opportunity of participating, and the Long Service Fund for England Irish and Wales will benefit. It is hoped, moreover, that the and Scottish organisations will be able to proceed on similar lines. Over 1200 associations are affiliated to the Institute.

THE NEW WHITEHAVEN INFIRMARY.—Some four years ago Whitehaven Castle, the Cumberland residence of Lord Lonsdale, was purchased and presented by an anonymous donor, together with £20,000, for conversion into a new Whitehaven and West Cumberland Infirmary. The alterations have now been completed. The ground floor, consisting of a long range of low rooms, is used for administrative purposes, the dispensary, X ray, electrical, out-patients' and casualty departments. The first floor has been turned into wards for men, women, and children, and the total accommodation is 86 beds—there were formerly 60—with 47 staff bedrooms.

LUPUS OF THE NOSE AND UPPER AIR PASSAGES TREATED BY RADIUM.

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Ætiology.

LUPUS, contrary to the usual belief, is a disease that affects the mucous lining of the nose, mouth, and upper air passages quite as much as the skin of the face and neck. In fact, in almost all cases the granulations start in the nose at the junction of the skin of the vestibule with the mucous membrane, or just on the mucous side of that junction, and spread to the skin of the face, as well as the inside of the nose.

Lupus affects young adults of both sexes, and in our experience male sufferers are as numerous as female; but this is not the opinion of some authorities. It is not often seen before the age of 15, and, in its active stage, rarely above the age of 40, though the disfigurement caused by its ravages lasts until the death of the patient. By far the greater number of cases are about the age of 20, and of the lower middle class.

Pathology.

Lupus is caused by a mild form of tubercle bacillus and spreads very slowly. On the skin the lesions are of the "apple-jelly nodule" type, with peripheral spread. As the disease makes headway there is ulceration just within the periphery of its area, while in the centre scarring takes place spontaneously. The scarring is of a rough and very disfiguring nature, with irregular contractions of the white scar tissue, and red patches between.

Several types are recognised by skin specialists. In the upper air passages four definite macroscopical types are recognisable.

(*a*) *Granulations.*—This is the most common and most typical form. The granulations are often spread evenly over the surface of the mucous membrane, and may extend from the vestibule of the nose as far as, and even to a little below, the larynx. They are soft and velvety in appearance and to the touch; and have occasionally a greyish surface, which bleeds on touching with a probe or other instrument.

(*b*) *Vegetations or Proliferations.*—These occur, as a rule, only in the vestibule of the nose, and resemble a branching sessile papilloma. They may protrude at the nostril. They occur in conjunction with other types of the disease in the same patient.

(*c*) *Tumours.*—It is difficult to explain the formation of these lumps or to say of what they consist. They occur in the choanæ and on the superior surface of the soft palate, and can be seen with a post-nasal mirror. They have no connexion with the posterior ends of the turbinated bones. They are also found in the interarytenoid region of the larynx, and cause obstruction to the vocal processes of the arytenoid cartilages, preventing full approximation of the vocal cords. They must not be confused with tuberculous tumours or pachydermia of this region. They disappear on the application of radium.

(*d*) *Ulceration.*—This is a very troublesome variety, which is found most commonly in the mouth, on the under surface of the lip, and on the hard and soft palate. It is very resistant to all forms of treatment, and consists of a heaped-up and thickened mucous membrane, in which are small, deep, punched-out serpiginous ulcers or pits. This form of the disease bears a superficial resemblance to some forms of syphilis and is often mistaken for it.

Reaction of the Four Types Described to Radium Treatment.—Of the types of lupus described, the first three may be considered to be particularly favourable in their yielding to treatment by radium. These three types are: (*a*) Granulations, (*b*) vegetations, and (*c*) tumour formation. The last type (*d*) ulceration is much less readily dealt with, but can be arrested and held in check in a satisfactory manner. As will be seen later, where the action of radium is described, the reason for this less favourable reaction to treatment is most probably due to the fact that less granulation tissue is formed in this type of the disease than in the others.

Modes of Spread.

Starting in the Nose.—Although the following modes of spread are described separately they may be found in conjunction with one another. The granulations may start just inside the nose, at the junction of the skin of the vestibule with the mucous membrane, and may be found either on the septum, the inside of either of the alæ nasi, or on the floor of the nasal fossæ. From this starting point they may spread in three directions: (1) To the outside of the nose, with apple-jelly nodules on the skin, and ulceration and gradual destruction of the alæ nasi. This is accompanied by much thickening of the structures of the nose, both cartilaginous and soft; and the vestibule is blocked and often widely stretched by masses of hard crusts, which can be picked off, leaving a bleeding surface, but which re-form again in a very short time. This type leaves behind it the facial disfigurement with which everyone is familiar, and which is very unsightly and distressing to a female patient. Once having reached the skin, the disease may spread widely over the face if not checked by suitable treatment. (2) Along the nasal fossæ to the rest of the upper air passages. The common mode of spread is along the inferior turbinated bone, but the septum may be affected and even perforated. The posterior ends of both inferior and middle turbinates may be covered with granulations. The superior surface of the soft palate is next affected, and tumours may form in this position where they rest against and are attached to the vomerine part of the nasal septum. The whole post-nasal space may be covered, including the Eustachian cushions and posterior pharyngeal wall. From the superior or naso-pharyngeal surface of the soft palate the disease spreads over the uvula and buccal surface, and so on to the hard palate. Tracking down the anterior and posterior pillars of the fauces and over the tonsils or tonsil beds, it then gains the epiglottis and eventually covers the whole of the larynx. The epiglottis becomes swollen, covered with granulations, and eventually either permanently thickened or else eaten away. The vocal cords are often completely covered, with loss of voice, which may be permanent if not rightly treated. Tumours may form in the interarytenoid region. In addition to the larynx the posterior third of the tongue may be invaded, with much heaping up of granulations, and stiffness and soreness of the organ itself. (3) Starting in the floor of the vestibule, the disease may track through into the angle between the lip and the alveolus of the upper jaw, and so gain the buccal cavity, where it spreads along the gums and on to the hard and soft palate.

Starting on the Lip or Gums.—The granulations may first appear on the lip and spread over the gums and hard and soft palate and so to the pharynx and larynx. Or they may miss the palate altogether, and leap straight from the lip to the pharynx or larynx.

Clinical Manifestations.

The chief thing noticeable about these patients is that though they may be suffering from a very extensive lesion, they are not definitely ill; although they are usually in a poor state of health, and are found on questioning to live an indoor life under conditions which are not conducive to general physical fitness. Apart from this the symptoms of the disease are those which it produces according to the actual organ affected.

(1) *In the Nose.*—Nasal obstruction is produced by granulations or proliferations of the papillomatous type on the anterior part of the septum and the inner surfaces of the opposing alæ nasi. The obstruction invariably persists, and is maintained later by the thickening of the soft parts, and the piling up of granulations and thick crusts, which form so unpleasant a feature of the disease. This obstruction often lasts for years and may be permanent if unwisely treated. Nasal discharge is one of the earliest signs. It is very scanty and thin, sometimes tinged with blood, and arises from the granulations. It rarely persists for more than a year, after which the nose becomes dry. Bleeding is not common, but occurs from the granulating surface when a crust is removed. It is not profuse.

(2) *In the Post-nasal Space.*—The condition here is one of dryness and scarring which spreads down the posterior pharyngeal wall. There may also be nasal obstruction made more pronounced by the formation of tumours in the posterior choanæ.

(3) *Soft Palate and Fauces.*—Both surfaces of the soft palate and all the pillars of the fauces are frequently attacked together. The result is a thickening, stiffening, and immobility of these parts, occasioned not only by the active disease itself, but by the scarring left by it, when eventually, after the passage of years, it becomes healed. This condition leads to a nasal intonation of the voice, and, on rare occasions, to regurgitation of fluids into the nose when swallowing.

(4) *Mouth and Tongue.*—There is thickening, stiffness, and deformity of the lips where they are affected, and a general dryness and soreness of the mouth, especially where there is widespread thickening of the mucous membrane with the deep, indolent, serpiginous ulceration already described. The tongue may be rendered slightly immobile and the taste impaired.

(5) *Larynx.*—The most serious effects are seen in this part. Huskiness is a common symptom when the epiglottis and parts of one or both vocal cords or the interarytenoid region are affected. But the disease soon overwhelms the whole larynx with total loss of voice, which persists for many years, and may be permanent if allowed to progress until the larynx becomes a mass of scar tissue, or if it is unwisely treated. In such cases, not only is the voice irretrievably lost, but the glottis sometimes becomes inadequate, and tracheotomy has to be performed, a result which can only be described as disastrous. When there is loss of voice the whisper is often very feeble owing to the larynx becoming stiff, and being held widely and rigidly open, so that a forcible stream of air cannot be expelled through it, as through a narrower orifice. The result is that the whispered speech can only be heard by placing the ear close to the patient's mouth.

Prognosis.

Considerable divergence of opinion in certain details is to be observed among authorities of long experience. In certain favourable cases there is a definite tendency to heal under conditions which, as is aimed at in frank tuberculosis, promote the general health and resistance. On the other hand, in the great majority of patients the disease goes on for many years, and eventually leaves its victim hideously disfigured, with permanent nasal obstruction, permanent loss of voice, and sometimes even with a tracheotomy.

While Sir StClair Thomson in England emphasises this tendency to heal, in America Wendel Christopher Phillips in his standard text-book dismisses the subject in the following words: "Laryngeal lupus is practically never cured. It may be arrested for a time, but it will finally reappear and cause a fatal termination." The authors' own experience is that in the majority of cases a definite disappearance of the disease can be obtained by suitable measures of treatment; and that if in certain small areas there is a tendency to recur, the local recurrence can again be dealt with by a repetition of the same treatment. Even in those cases of the "ulcerative" type, which most obstinately resist treatment, a great mitigation and relief of symptoms can be obtained within a short time.

Treatment.

(1) *General.*—All possible means must be taken to improve the general health—i.e., an open-air life, a generous diet, and tonics containing iron and arsenic, or cod-liver oil and malt.

(2) *Local.*—The unsatisfactory nature of previous methods of local treatment can be estimated by their large number, and by the fact that only one method has any enthusiastic adherents. This method is the destruction of the disease by galvano-cautery. But even this is not applicable to cases where the disease is very extensive and, as may readily be understood, to a large extent inaccessible to its application; as, for example, when the seat of the disease is the post-nasal space. The authors can recommend the following methods of treatment:—

In Slight Cases.—When the disease is in the neighbourhood of the vestibule of the nose, or in parts of the mouth which are readily accessible, the galvano-cautery is a rapid and easy method of exterminating very small patches. The burning causes replacement of the affected area by strong white scar tissue, which has, however, the effect of immobilising the part so treated.

In Severe and Extensive Cases.—In the authors' experience the majority of cases, when first seen, have reached a stage which puts them in this category, for which they can confidently recommend treatment by radium.

Clinical Aspect: The Present Situation of Radium Therapy for Lupus of the Upper Air Passages.

(*a*) This method of treatment, as is mentioned later, is not new. But very few cases have previously been published, and so its advantages have not come into prominence. But, having closely observed the progress of a series of fresh cases for a period extending over two years, the authors feel that the results have been so happy that further delay in publishing them is unnecessary. They realise that time alone can give the ultimate scientific verdict on the questions of complete cure and possible recurrence. But during the years that must elapse before such a verdict can be given many sufferers might be condemned to years of speechlessness and a lifetime of disfigurement which could quite well be avoided. The authors are convinced that the aphonia is in the majority of cases curable and the facial disfigurement avoidable. They would therefore urge that the disease should be treated before it has exceeded the limits which allow of a satisfactory result being obtained—i.e., before the larynx has been partially destroyed and before facial disfigurement has actually occurred.

Further experience in radium therapy of lupus of the upper air passages is necessary to enable an authoritative announcement to be made; but it may reasonably be hoped that, in dealing with the obstinate ulcerative type of lupus, a method of reducing it more rapidly may soon be found.

(*b*) *Coöperation between Laryngologist and Radio-therapeutist.*—This ensures the correct dosage of radium being given and also its accurate application to the affected area. We regard this as the fundamental condition of success in treatment, and feel justified in doing so because of satisfactory results which have attended this collaboration. The laryngologist should always point out the particular parts requiring radium applications, and when necessary should manipulate the tubes into position and apply cocaine as occasion requires. This is especially necessary deep in the nose, the post-nasal space, and on the soft palate.

(*c*) *Advantages of Treatment by Radium.*—In addition to the successful alleviation of the complaint this treatment has much to recommend it. The treatment consists of short courses of four to five hours on three, four, or five consecutive days. These short courses are repeated at intervals of six weeks to two months, for a year or even longer until the disease is eliminated. At each session the tubes or plates are placed in position, with or without the application of cocaine, and kept there for the requisite time. This involves no pain and little inconvenience or discomfort. The treatment should be continued for a period extending from a few months in slight cases to about a year or more in extensive cases—i.e., about six short courses at two monthly intervals in serious cases. By this time a serious though favourable case is apparently cured, the slight cases in a very much shorter time.

(*d*) *Methods of Application of Radium.*—In the nose radium may be applied in the form of plates to the outer surface, and in tubes, fastened at the end to a silver wire, to the interior. The tubes can be pushed to any distance into the nasal fossæ, which can if necessary be cocainised previously. In the post-nasal space and on the upper surface of the soft palate the radium is applied by means of similar tubes passed through the nose. In the mouth application is by tube or plates of suitable size; the fauces and soft palate should be cocainised before application. The larynx is treated by external plating.

(*e*) *Action of Radium.*—Broadly speaking, radium has two forms of action. In lethal doses it is a destroyer of living tissue and is used to destroy new growths. But in stimulating doses it has the effect of accelerating the formation of fibroblasts, and so assists the maturing of granulation tissue. When these doses are applied to chronic granulations, such as are found in tuberculous and lupus lesions, they stimulate them to fulfil their function in replacing the disease by scar tissue, and so perform their duties as a natural defence against disease. In chronic lesions caused by the tubercle bacillus, where the spontaneous cure is by fibrosis, radium acts as a powerful ally of Nature. Moreover, its action is selective, and fibrous tissue is laid down only where the presence of the tubercle bacillus has elicited the inevitable tissue reaction, so that just enough and no more scar tissue is laid down to get rid of the disease. This scar tissue is soft and pliable, and no unnecessary rigidity of mobile parts, such as the larynx and soft palate, is produced.

Again, some small patches of lupus are so faint that they cannot be seen by the naked eye. But the radium searches them out, and when the swelling takes place, which marks the reactionary stage of treatment, the presence of minute patches of the disease becomes apparent. The action of radium is therefore more thorough than any treatment dependent upon exact identification by the surgeon. In addition, there is the action of the rays upon the tubercle bacilli themselves.

Many experiments have been made by Mr. A. E. Hayward Pinch regarding the action of radium rays on cultures of the tubercle bacillus, and it has been found that an exposure of at least 100 hours with a full strength unscreened apparatus is necessary to produce a lethal effect. Owing to the tremendous reaction which such a dose would have on the human tissues, radium cannot be used for the purpose of actually killing the tubercle bacillus. It has been noted, however, that cultures of tubercle bacilli which receive a fairly short radiation have their vitality inhibited, and subcultures made from them grow much more slowly than the controls and exhibit numerous involution forms. It is probable, therefore, that the radiation of a lupus patch for a moderate length of time weakens the vitality of the tubercle bacilli, and so enables their ingestion by phagocytes to be more easily accomplished.[1]

(*f*) *Macroscopical Appearances of Healing.*—(1) The reactionary stage. This is at its height in ten days to a fortnight after the application of radium. During this stage any crusts come off of their own accord, leaving a smooth surface. The affected area becomes swollen from œdema and covered with a thin layer of sticky secretion. (2) The healing stage. In another fortnight the same area will be seen to be shrunk below its original diseased condition, and part of it will be covered with fresh mucous membrane over a partial layer of finely striated scar tissue, which, however, is not immediately visible, but can be seen at the end of treatment. This healing process, starting at the edge of the affected area and progressing to its centre, takes place in stages after each course of applications until all the lupus has disappeared. Sometimes the disease is eliminated without any visible formation of scar tissue—a matter of considerable importance in dealing with mobile parts of the throat.

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[1] Radium Institute Reports.

(*g*) *Restoration of Function.*—This is one of the greatest attributes of radium treatment and is dependent upon its selective and economical action in the laying down of scar tissue. The disease is eliminated and the function of the part restored.

(1) The greatest blessing of this is found in the larynx. Young adults, who have for three and four years been condemned to the life of a recluse owing to their complete aphonia, have within a few weeks been restored to normal and happy human beings and are able to enjoy the usual amenities of life. This has occurred without exception in all the laryngeal cases treated. These cases are in marked contrast to some which are left to themselves, or treated by cautery or scraping, in which thick scar tissue forms, causing incurable aphonia and sometimes necessitating tracheotomy. In contrast to the treatment adopted in tuberculosis of the larynx, where complete rest for the throat is enjoined, the patient suffering from lupus should be encouraged to use the voice as much as possible while under treatment with radium so as to regain whatever suppleness is possible in the scarred muscle tissue and mucous membrane.

(2) In the nose the results are equally satisfactory if less dramatic. The swelling and crusting completely subside, leaving a free airway and often a healthy secreting surface.

(3) The soft palate and fauces, although occasionally scarred, are left in a freely mobile condition, thus assisting the normal return of the voice. In one case where there was more scarring than usual, massage was applied to the part under local cocaine anæsthesia and free mobility restored.

Technical Aspect of Radium Therapy.

1. *Rays.*—For the sake of those who are not conversant with the elementary therapeutics of radium, it may be well to give a very brief account of the rays emitted by its salts. They are of three types: (1) Alpha rays, whose therapeutic power is practically nil, as they are unable to pass through the walls of their containers, and in the case of varnished applicators only a few rays can escape; they are absorbed very quickly, normally at a depth of 0·01 mm. from the surface of the skin.

(2) Beta rays, which are much more penetrating than the above. They are divided into: (*a*) Soft, which cannot pass through 0·2 mm. of aluminium; (*b*) medium, which can pass through 0·2 mm. of aluminium, but not through 0·2 mm. of silver; (*c*) hard, which can pass through 0·2 mm. of silver. The soft beta rays are rapidly absorbed, but the hard beta rays are only reduced to about 6 per cent. of their initial value in their passage through 1 cm. of body tissue.

(3) Gamma rays—these are very penetrating; the radiation which will pass through 2 mm. of lead consists only of gamma rays; so penetrating is their power that it requires a thickness of 14·4 cm. of blood, or 7·6 of muscle tissue to reduce them to 50 per cent.

For the purpose of this paper it may be stated that: A screen of lead, 0·1 mm., allows 23·6 per cent. beta and 99·5 per cent. gamma rays to pass; a screen of silver, 1·0 mm., allows 1·18 per cent. beta and 95·5 per cent. gamma rays to pass; a screen of lead, 2·0 mm., allows 0·37 per cent. beta and 92·8 per cent. gamma rays to pass. To put it shortly, the beta rays are destructive and cause a surface reaction comparable to cauterisation, burns from the first to the fourth degree resulting from an unscreened application, according to the strength and duration of the variation. These changes, however, take place slowly, the summit of the reaction not being reached for about 14 days; the associated gamma rays meanwhile stimulate the growth of fibroblasts and so aid the process of repair, complete healing eventually taking place. By suitable screening this destructive action of the hard beta rays can be modified to the degree required.

2. *Apparatus and its Application.*—The strength of all apparatus described below is expressed in terms of hydrated radium bromide, a salt the radium element content of which is 53·6 per cent. As this salt is deliquescent and unstable, it is always converted into the insoluble sulphate before being fixed in apparatus.

The following methods of treating lupus of the nose and upper air passages were elaborated by Mr. Hayward Pinch in 1911, and have been used at the Radium Institute ever since.

(*a*) When treating the more accessible parts, such as the nares, post-nasal space, fauces, uvula, tongue, and buccal mucous membranes, glass tubes (varying from 1·5 cm. to 4 cm. in length, and from 0·2 cm. to 0·3 cm. in diameter) containing 25 mg. of the salt are used. These are screened with 1 mm. of silver and are covered with rubber, being kept in the desired position by means of either a flexible wire attached, a stout piece of silk threaded through an eyelet at the proximal end, or by using dental wax. As stated above, this screening (silver, 1 mm.) only allows 1·18 per cent. of the beta rays to pass which causes a much modified destructive reaction, the associated gamma rays aiding the process of repair. These tubes are usually retained in position for from two to six hours (not more than two hours at one sitting).

(*b*) Early cases of lupus of the palate are treated with full strength (i.e., 10 mg. to the square cm.) unscreened applicators, covered only with rubber sheeting, for one hour.

(*c*) Chronic cases of lupus of the palate, and also those which have already been radiated, are treated with half strength (i.e., 5 mg. to the square cm.) plates, screened with lead, 0·1 mm., and covered with rubber sheeting; these applicators are retained in position for from one to one and a half hours. Lesions of the gums and buccal mucous membranes are treated in the same way.

(*d*) In treating the larynx, half strength (see above) plates screened with lead, 2 mm., and covered with rubber sheeting are used. These usually contain 40 to 80 mg. of the salt, two or three being applied externally over a thin layer of cotton-wool and fixed in position by strapping and bandages. In this way a purely gamma radiation is obtained, and there is no danger of damaging the skin or intervening tissues. It has been sometimes stated that radium may cause necrosis of the laryngeal cartilages, but no case of this nature has ever been observed at the Radium Institute. From 100 to 200 mg. are used at each sitting of five hours, and this is usually repeated for from three to five days, according to the severity of the lesion.

It will be seen from the above that in a case of average severity a patient will receive about 100 mg. hours (salt) with silver, 1 mm., to each of the more accessible areas, detailed above (*a*), and about 3750 (150 × 25) mg. hours (salt) with lead, 2 mm., to the larynx externally. This treatment is generally repeated at intervals of six weeks to two months, according to progress ascertained by the laryngologist.

In the above description no mention has been made of the "emergent" secondary rays which have such an irritating effect on the tissues; these rays are eliminated by interposing aluminium, 0·2 mm., or several sheets of black paper between the leaden screen and the rubber sheeting.

Appendix of Cases Recently Treated.

Patients suffering from small lupus patches, which have readily healed after radium applications, are not included in this appendix, which contains only the more extensive cases.

The cases have been divided according to the organ principally affected in each case.

1. *Laryngeal cases*—i.e., cases in which the disease affected the larynx as well as other parts of the upper air passages. These are the most extensive and serious cases as far as the upper air passages are concerned. Owing to the patient's aphonia, the condition of the larynx has been the principal consideration in treatment, apart from actual cure.

CASE 1.—Types (A) granulations and (C) tumour formation are exemplified. An unmarried woman aged 24.

History.—Tuberculosis of apex of right lung which had been quiescent for some years. 1918: Developed nasal obstruction due to lupus. Wassermann reaction negative. 1919: Her voice became husky and disappeared altogether. For four years she lived the life of a recluse for fear of infecting others, and also owing to being unable to speak to anyone.

Examination (June, 1923).—General condition good. Tuberculosis of lungs quiescent. Nose: Cartilaginous part bulging as if from large polypi, but in this case caused by extensive crusting within the vestibule. Posterior edges of the vestibule and the anterior ends of the inferior turbinates were covered with large crusts, which also surrounded a perforation of the septum about the size of a threepenny-bit. The nose was almost completely obstructed by the crusts. On removing one of the crusts a swollen and bleeding surface was revealed. Post-nasal space: In the right choana and resting against and attached to the septum was a rounded white tumour about the size of a hazel-nut. Pharynx and fauces: The uvula was rigid and much swollen, with a granular surface. Granulations extended down the posterior left faucial pillar and tonsil bed and both the right pillars and right tonsil bed. The pharynx was heavily scarred from healed lupus. Larynx: Epiglottis scarred, deformed, and apparently healed. Both ventricular bands and vocal cords were thickly covered with granulations, and there was swelling of the interarytenoid region with granular surface. Phonation: The whole larynx was stiff and the cords did not approximate. Voice: Nil. Whisper very feeble and only faintly audible.

Treatment.—Starting from Nov. 5th, 1923, she received short courses of radium treatment at two monthly intervals. These continued for a year.

Result.—After the first application of radium the crusting disappeared from her nose and she was able to breathe through it. Also, within six weeks she found herself able to speak for the first time after a silence of four years. The whole condition has since completely cleared up. Her soft palate was a little stiff, but to this mobility was restored with massage under cocaine anæsthesia by Miss Curling. The voice is still somewhat husky, but is loud and the words clearly audible, and she can speak for any ordinary length of time without increased huskiness of voice or tiredness of the throat.

CASE 2.—Types (A) granulations, (B) vegetations, and (C) tumour formation. The patient, a girl aged 18 years, had for three years suffered from nasal obstruction and complete loss of voice.

Examination.—Nose: Lupus of the vegetating type (B) was protruding from the left nostril. Granulations (Type A) extended through the left nasal fossa as far as the post-nasal space. The posterior half of the right nasal fossa was also covered. Post-nasal space: The posterior ends of both middle and inferior turbinates were affected, also the posterior pharyngeal wall and the superior surface of the soft palate. Pharynx and fauces: The pharynx was much scarred, and the uvula, fauces, and tonsil beds covered with granulations. Larynx: Epiglottis, ventricular bands, and vocal cords were all thickly covered. In the interarytenoid region was a fair-sized lupus tumour (Type C). Voice: Completely absent. Whisper only faintly heard. We had the greatest difficulty in persuading this patient or her mother that she would regain her voice. She had been to the Radium Institute two years previously and been told that the disease was too deep-seated to be attacked by radium.

Treatment.—Courses of radium at two monthly intervals.

Result.—The whole condition has cleared up. There is no nasal obstruction and no scarring except in the posterior pharyngeal wall and epiglottis. The voice returned in four months and is now quite normal, and the patient is able to sing. The palate and fauces are freely mobile and show no scarring.

CASE 3.—Types (A) granulations and (D) ulceration. The patient, a woman aged 35, had for some years suffered from soreness and induration of the lip, and more recently from huskiness of voice, which for the last year had become complete aphonia.

Examination.—Lip: The under surface of the upper lip was covered by old-standing indurated lupus of the ulcerative type. Pharynx: There was a patch of lupus about the size of half-a-crown in the posterior pharyngeal wall. Larynx: The epiglottis was destroyed. Both vocal cords were affected, but the left vocal cord and ventricular band were very thickly covered. Voice: Absent.

Treatment.—Short courses of radium at intervals of two months.

Result.—The voice returned in a few weeks and is now quite normal. The whole condition has made good progress and is nearly healed.

CASE 4.—Types (A) granulations and (D) ulceration. A man, aged 18, had for two years suffered from nasal obstruction and loss of voice, with soreness and stiffness of the back of the tongue.

Examination.—Nose: Lupus granulations over the right inferior turbinate. Post-nasal space: Some scarring of the posterior wall. Palate and fauces: Some ulceration in small scattered patches. Tongue: The whole of the posterior half was covered with massive piled-up granulations. Larynx: The epiglottis very much thickened and swollen. The posterior parts of the vocal cords and the interarytenoid region were affected, and also, to a certain extent, the subglottic space. Voice was almost gone, but the patient could cough and occasionally say some words.

Treatment.—This was carried out according to the usual principles.

Result.—The voice returned and became quite strong though still a little husky. The larynx is healed except for the epiglottis, which is still thickened. The nose and tongue are healed. But the patches in the palate and fauces being of the "ulcerative" type, resisted treatment for some time, but have been arrested and held in check. They have since healed.

2. *Nasal Cases.*—These are cases in which the nasal condition has been predominant, and in which the avoidance of its destruction and disfigurement has been the first consideration in treatment.

CASE 1.—Shows apple-jelly nodules on nose and lip and Type (A) granulations in the nose and pharynx. Patient is a man, aged 18. Had for several years suffered from nasal obstruction, and for one year had noticed spots on his nose and lips, with swelling and crusting of the right nostril.

Examination.—Nose: In the right nasal fossa the granulations extend back to the nasopharynx. In the left nasal fossa there is some slight granulation. Nasopharynx and pharynx: Granulations extend downward behind both posterior pillars of the fauces, which are themselves slightly affected. Larynx unaffected. Neck: Both tonsillar glands are swollen.

Treatment.—The usual line of treatment has been followed.

Result.—The whole condition has made very satisfactory progress. There is now no danger of destruction of the right alar cartilage, and most of the disfigurement already apparent has disappeared. It has since healed.

CASE 2.—Shows apple-jelly nodules on the nose and Type (A) ulceration. The patient, a man aged 21, had for three years suffered from swelling and disfigurement of the nose, with nasal obstruction, and much crust formation in the nostrils. His throat also had been sore and his voice husky for a year.

Examination.—Nose: The whole end of the nose was much swollen and covered with apple-jelly nodules, which also covered the alæ. The vestibule on each side was widely dilated with crusts and granulations extended far into the nose. There was complete nasal obstruction. Post-nasal space: Some scarring and granulations in the superior aspect of the soft palate. Palate and fauces: The whole of the soft palate and fauces and most of the hard palate were covered with a uniform raised red mass of granulations. Larynx: The epiglottis was thickened with granulations and the anterior end of the left vocal cord slightly affected. The voice was husky but not markedly so.

Treatment.—As in the previous cases.

Result.—The case is still under treatment. The nose is now nearly normal and all risk of breaking down and disfiguration has gone. The patient can breathe well through both sides of the nose. The condition of the palate and fauces is rapidly disappearing. The epiglottis is still thickened, but the voice has returned to normal.

CASE 3.—Types (A) granulations and (D) ulceration. The patient is a girl aged 16.

History.—For several years she had suffered from "sore on the nose."

Examination.—These sores were extensive and consisted of red granulating patches on the end of the nose and on the alæ. There was also much crusting in both vestibules, with distension of the nostrils. It was impossible to see any distance into the nose. Mouth: The whole of the soft and hard palates, the fauces, tonsil beds, and the gums of the upper jaw were smothered with lupus of the ulcerative variety. Larynx : The epiglottis and superior surface of the arytenoids were diseased.

Treatment.—Short courses of radium therapy at two monthly intervals.

Result.—Nose : This has much improved. The nose, although not quite normal in appearance, is now free from lupus on the outside. The edges of the alæ, however, are rather irregular. Mouth : The extensive area affected entailed prolonged treatment, but satisfactory progress has been made and the parts involved are now nearly healed. Larynx : Satisfactory progress has been made.

Several other cases have been, and are still, under treatment, but they have not been long enough as yet to justify a report being made.

For the opportunity of treating three of the reported cases the authors are indebted to the courtesy of Mr. Herbert Tilley, Dr. A. M. H. Gray, and Mr. Michael Vlasto.

RECORD OF A BLOOD CRISIS.*

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THE significance of a blood crisis lies in the fact that there is a tremendous over-activity of the bone-marrow, by which young immature red cells, some embryonic in type, are thrown into the general circulation in order to counteract the effects of blood loss due to hæmolysis. Though such a crisis is usually of good prognostic significance the efforts of the bone-marrow may be unavailing, as in this case.

E. B., a married woman, aged 42, was admitted to the Royal Infirmary, Manchester, under Dr. E. M. Brockbank's care on June 26th, 1923.

A blood count was taken on the same date with this result : red cells, 1,126,000 per c.mm. ; leucocytes, 3600 per c.mm. ; hæmoglobin, 22 per cent. ; colour-index, 1·0 ; normoblasts, 57 per c.mm. ; megaloblasts, 43 per c.mm.

Differential leucocyte count (per cent.) : Polymorphs, 44 ; lymphocytes, 52·8 ; large mononuclears, 1·6 ; eosinophiles, 1·6 ; mast cells, 0.

The red cells showed a marked degree of anisocytosis, poikilocytosis, and macrocytosis. Punctate basophiles and polychromatophiles were not found, and blood platelets were apparently absent. Though the colour-index was somewhat low, the clinical findings and other features of the blood count were in accordance with the diagnosis of pernicious anæmia which was made.

Further blood counts were made on July 3rd and 10th, and owing to the large numbers of nucleated red cells found on the latter date counts were performed daily until the crisis had subsided.

Date in 1923.	Red cells.	Hæmoglobin.	Leucocytes.	Colour-index.
	per c.mm.	%	per c.mm.	
3/7	1,184,000	24	3600	1·04
10/7	1,408,000	24	6600	0·86
11/7	1,528,000	24	6800	0·80
12/7	1,480,000	24	6600	0·82
13/7	1,416,000	22	6600	0·75
14/7	1,248,000	20	5800	0·80
15/7	1,336,000	20	5000	0·72
16/7	1,352,000	20	4200	0·70
17/7	1,240,000	20	3600	0·83

Date in 1923.	Megaloblasts.	Normoblasts.	Erythroblasts.	Free nuclei.	Punctate basophiles	Platelets.
	per c.mm.					
3/7	100	72	0	0	0	0
10/7	3142	5544	52	0	0	0
11/7	3508	6065	108	897	136	Few
12/7	1768	4382	0	940	66	0
13/7	976	2877	26	871	330	Few
14/7	739	1545	0	690	0	Few
15/7	240	440	0	140	100	0
16/7	33	168	0	151	84	0
17/7	29	72	0	144	0	0

The differential leucocyte counts have been omitted as there was little of interest beyond an increase in eosinophile polynuclears from 0·8 per cent. on July 3rd to 4·4 per cent. on July 12th and 4·8 per cent. on July 14th, after which date the percentage rapidly fell. A relative lymphocytosis of about 60 per cent. was maintained throughout the crisis. Film preparations showed well-marked polychromasia and punctate basophilia. Moreover, there was great variety in the type of nucleated erythrocyte seen. A few cells showed mitotic figures, and in a few apparent extrusion of the nucleus was taking place.

In addition to normoblasts and megaloblasts a more primitive cell, the erythroblast, was observed, a large cell with an intense basophile protoplasm and an oval or round structureless nucleus, stained purple with Leishman's stain. Included in the counts among the megaloblasts were the metrocytes, which cells possess a megaloblastic nucleus with only a narrow fringe of polychromatophilic protoplasm. Cells with oak leaf nuclei were also numerous ; they resemble the normoblasts (with which they were classed in the counts) but the protoplasm is usually polychromatophilic and their nucleus is serrated, resembling an oak leaf. Free nuclei are pyknotic in character, and are small oval or round bodies. In some erythrocytes there were small round bodies which took up the nuclear stain and sometimes formed a complete ring surrounding the nucleus. These are known as Howell-Jolly bodies.

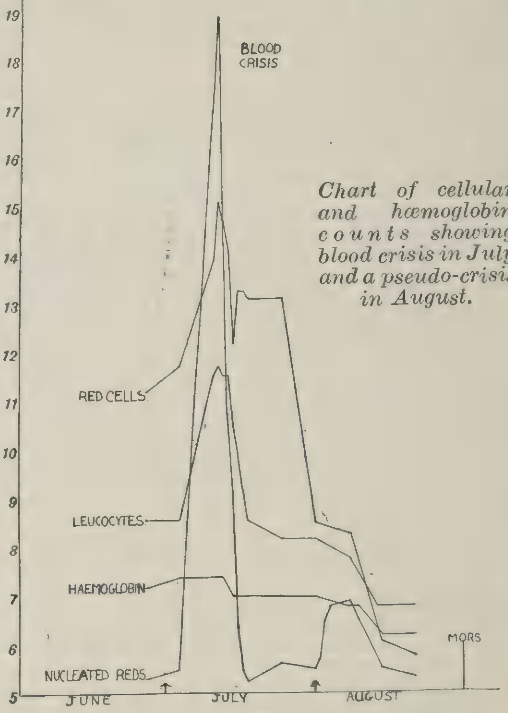

Chart of cellular and hæmoglobin counts showing blood crisis in July and a pseudo-crisis in August.

Blood counts were taken on July 24th and 31st with these results :—

	24/7/23.	31/7/23.
Red cells (per c.mm.)	1,236,000	856,000
Leucocytes (per c.mm.)	3,200	3,200
Hæmoglobin (per cent.)	20	16
Colour-index	0·89	1·05
Normoblasts (per c.mm.)	134	102
Megaloblasts (per c.mm.)	64	64
Erythroblasts . .	0	0
Free nuclei	0	0
Blood platelets . .	0	0
Punctate basophiles	0	0

On August 2nd the patient asserted that she felt extremely well, and as this sense of well-being had been the prelude to the crisis, the possibility of a second crisis was entertained and daily blood counts were made for three days.

The following table shows that there was a definite rise in the number of nucleated red cells though not of sufficient magnitude to warrant a full daily examination :—

	2/8/23. per c.mm.	3/8/23. per c.mm.	4/8/23. per c.mm.
Megaloblasts	96	240	216
Normoblasts	120	216	264
Erythroblasts . .	0	0	0
Free nuclei	48	144	94

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* Part of a thesis submitted for the degree of M.D. Manch.

From this date the blood value steadily decreased in spite of energetic treatment, and a count taken on August 21st (the day before her discharge home) gave this result: red cells, 576,000 per c.mm.; leucocytes, 1800 per c.mm.; hæmoglobin, 12 per cent.; colour-index, 1·1; normoblasts, 43 per c.mm.; megaloblasts, 14 per c.mm.; other abnormal erythrocytes, 0; platelets, 0.

Differential leucocyte count (per cent.): polymorphs, 28·0; lymphocytes, 67·6; large mononuclears, 2·0; eosinophiles, 2·4; mast cells, 0.

She died on August 31st, 1923, and no post-mortem examination was obtainable.

The chart gives a graphic representation of the occurrence, and it shows also the less-marked increase which might be termed a "pseudo-crisis." The accompanying increase in red cells and leucocytes is also demonstrated, but it will be noted that there was no corresponding increase in hæmoglobin percentage, thus accounting for the low colour-index.

Erythroblasts and megaloblasts are representatives of embryonic regeneration, normoblasts of extra-uterine function, and polychromasia and punctate basophilic cells are evidence of immaturity. Naegeli [1] considered that "free nuclei" were artefacts, and Kölliker that they were normoblasts with an extremely narrow band of protoplasm. They are of interest in so far that, if they represent normoblasts, an increase in their numbers indicates a return of the bone-marrow to its normal function.

I desire to thank Dr. Brockbank for his kind permission to publish the data of this case and for his interest and most helpful criticism.

THE ESTIMATION OF SMALL QUANTITIES OF BISMUTH IN THE URINE.

By CHARLES ALFRED HILL,
SUPERINTENDENT ANALYST, BOOTS PURE DRUG CO.

THE modern therapeutic use of bismuth and its compounds has rendered the estimation of small quantities of bismuth, especially in urine, a subject of interest, and among the fundamental reactions which are available, the conversion of bismuth into an alkaloidal bismuth iodide, which is also the reaction used in Dragendorff's test for alkaloids, appears to be the most promising. The reagent for the detection of bismuth suggested by Léger [2] consisted of 1 g. of cinchonine and 2 g. of potassium iodide dissolved in 100 c.cm. of water. Excess of this reagent added to a solution containing free nitric acid, but not free hydrochloric or sulphuric acid, gave a reddish bismuth cinchonine iodide precipitate in the case of appreciable quantities of bismuth, but giving a red colour with traces. An attempt to make this method quantitative resulted in failure, and unless the conditions were very carefully adjusted one could not be sure of getting the red bismuth cinchonine iodide rather than the greenish-yellow of bismuth iodide, slight differences in dilution, excess of reagents, &c., making a very marked difference in colour. Also, the cinchonine itself lends a fluorescence which interferes. It was found that by dividing the reagent into two parts, adding the cinchonine in excess, followed by the addition of potassium iodide in small amounts, the concentration being kept as high as possible, the reaction resulted in the formation of a fairly constant and maximum red colour. Caille and Viel [3] recommend as a reagent for the detection of bismuth in biological fluids a solution consisting of 1 g. antipyrin and 2 g. potassium iodide in 30 c.cm. of water. Their method was to destroy the organic matter by ignition and subsequently to dissolve the ash in nitric acid and evaporate. The ash was then dissolved in hydrochloric acid and the reagent added. This method failed to give consistent results, not only because the yellowish-green colour masked the red compound, but, as Léger had pointed out, the hydrochloric acid should be eliminated and not introduced. Also, the addition of hydrochloric acid to the residue after treatment with nitric acid would tend to produce chlorine, which would liberate iodine and spoil the results. The possibility of the production of nitrous acid seems to have been entirely ignored, though unless its presence is guarded against, the results would be quite useless owing to the continued formation of iodine. A further difficulty was encountered in the destruction of the organic matter in substances such as urine. It was found that unless the ignition was complete, the bismuth would be retained by the undestroyed organic matter, while if the temperature on ignition was too high some of the bismuth was converted into an insoluble form which could not be taken up by nitric acid and, after considerable experiments, the following method was devised, more particularly for the estimation of urine.

To Destroy the Organic Matter.

As the amount of bismuth is usually unknown, and as it is desirable to carry out the final colorimetric matching in a solution containing about 0·05 mg., in 50 c.cm. three separate quantities of 5, 20, 50 c.cm. each of the urine should be measured into separate silica beakers of 100 c.cm. capacity and evaporated on an asbestos board over a bunsen flame to about 5 c.cm.; the beakers are removed and 5 c.cm. of S.G. 1·4 nitric acid added, the basins replaced on the asbestos and evaporated to dryness and heated at the lowest possible temperature, so that the organic matter is oxidised but not charred; it is important to stop the ignition when all the nitric acid is driven off and then to remove, cool, and moisten with more nitric acid; again, the evaporation and heating are repeated with previously mentioned precautions and if necessary the procedure repeated with further small quantities of nitric acid until a white residue remains. After cooling, two drops of nitric acid and 25 c.cm. of distilled water are added and the solution boiled for a few minutes and transferred to a Nessler cylinder; if the lowest temperature for the destruction of the organic matter has been maintained, it will be unnecessary to filter the solution which should be perfectly clear and colourless. After rinsing out the beaker with further quantities of boiling water, the volume is made up to 50 c.cm. and cooled.

To Determine the Bismuth.

To the solution in the Nessler cylinder add 0·3 g. of urea, dissolve, and mix thoroughly, then add 0·5 g. phenazone, agitate to dissolve, and while still shaking add potassium iodide in very small crystals (average weight 0·05 g.) one at a time until a red colour appears; it will be readily seen when the maximum colour develops, then add one crystal in excess. The colour is quite easily imitated with a standard solution of bismuth made by dissolving 0·62 g. of bismuth carbonate B.P. in 10 c.cm. nitric acid (S.G. 1·4) adding water to 1000 c.cm., and further diluting 10 c.cm. of this to 1 litre. The best results in the control experiment are obtained by taking 10 c.cm. of this solution (equivalent to 0·05 mg. of bismuth, Bi) and 1 drop HNO_3 (S.G. 1·4), adjusting to 50 c.cm. in the Nessler cylinder and adding the reagents as the method specifies, and the comparison is made with the solution giving the most suitable depth of colour.

Test results to show the accuracy of the method were made by adding known amounts of bismuth to varying quantities from different samples of urine and treating as described. In every experiment the colour obtained was equably comparable with the blank containing the same amount of bismuth. Four individually different samples of urine into which no bismuth was introduced failed to produce any colour when similarly treated.

I wish to express my thanks to Messrs. Boots Pure Drug Co., in whose laboratory the work was carried out, and to Mr. H. Droop Richmond, F.I.C., for his interest and advice, and to Mr. J. A. Egglestone, B.Sc., for assistance in the experimental work.

MARGARINE IN MENTAL HOSPITALS.—The West Riding Mental Hospitals Board have rejected the recommendation of the Board of Control that 25 per cent. of the patients' allowance of margarine should be substituted by butter, on the ground that the diet already contains an adequate amount of fat. It was stated that butter would cost £2442 a year more than margarine.

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[1] O. Naegeli: Blutkrankheiten und Blutdiagnostik.

[2] Bull. Soc. Chem., i., 91-93, and Year Book Pharm., 1889, p. 116.

[3] Jour. Chem. Soc., 1923, ii., 443.

NOTE ON A

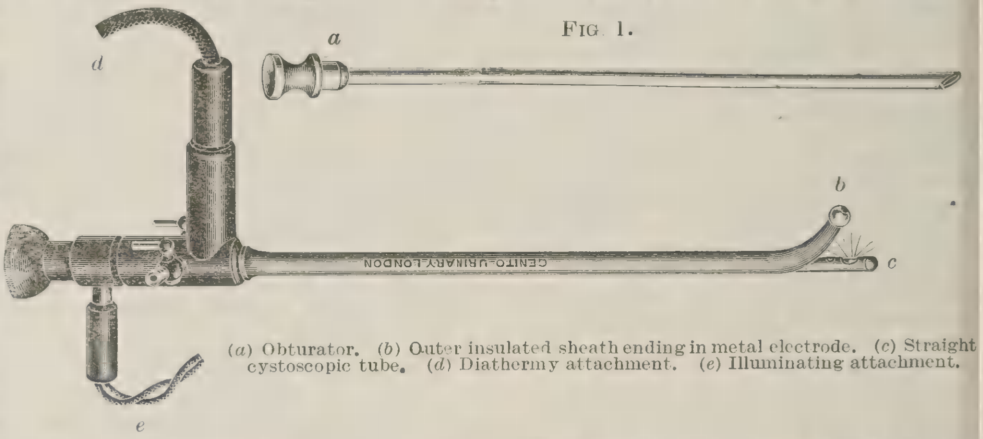
CYSTOSCOPE OF NEW TYPE

DESIGNED FOR THE APPLICATION OF DIATHERMY TO BLADDER TUMOURS.

BY FRANK KIDD, M.CH. CAMB., F.R.C.S. ENG.,
FORMERLY SURGEON TO THE LONDON HOSPITAL.

NOTHING can give more satisfaction to the surgeon than the ability to destroy a papilloma of the bladder without opening the bladder by means of diathermy applied with the catheterising cystoscope, a method we owe to the genius of Edwin Beer. By this means I have destroyed 48 cases of simple and malignant papilloma out of 72 cases treated. Nevertheless, it has long seemed to me that there was room for improvement in the technique. Through the ordinary catheterising cystoscope only a small electrode can be employed, with the result that it takes on an average at least three sittings to destroy a papilloma of ordinary dimensions. For a long time I have been thinking how I might devise a technique whereby a large electrode could be applied cystoscopically, so that I could hope to attain the destruction of a tumour at a single sitting, as is quite feasible if the bladder is opened by an incision and an electrode of large dimensions employed.

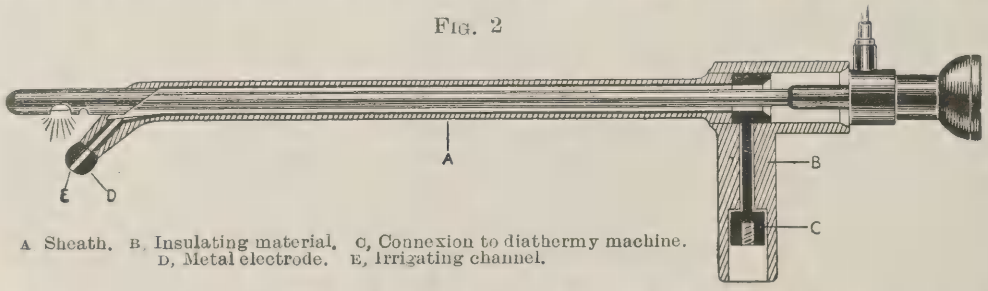
FIG 1.



(*a*) Obturator. (*b*) Outer insulated sheath ending in metal electrode. (*c*) Straight cystoscopic tube. (*d*) Diathermy attachment. (*e*) Illuminating attachment.

At length this idea has been made a practical reality by the invention of "bakelite," a material which is capable of sterilisation in boiling water, and which is a perfect insulating material. When this substance was brought to my notice by Mr. Schranz, of the Genito-Urinary Manufacturing Company, London, I told him of my idea and suggested a means whereby the problem could be solved. The result is the cystoscope which I am now bringing forward. I believe that this cystoscope is a new departure, and that it is likely to give quick results which have hitherto been quite impossible of attainment with the ordinary catheterising cystoscope. The idea is to use the cystoscope itself as the diathermy electrode, a large electrode as compared with the tiny electrode so far used through the catheterising cystoscope of the Nitze-Albarran type.

FIG. 2



A Sheath. B, Insulating material. C, Connexion to diathermy machine. D, Metal electrode. E, Irrigating channel.

The cystoscope consists of an inner tube of metal which is connected at its proximal end to one pole of a powerful diathermy machine, and which terminates at the distal end in a large metal ball perforated by a hole to permit of the circulation of irrigating fluid. This metal tube or electrode is insulated with "bakelite" except at its terminations, and is passed into the bladder armed with a metal obturator, the whole instrument being of a size No. 24 Charrière. The instrument is passed into the bladder, the obturator withdrawn, and the bladder washed clear and distended for inspection. Through the lumen of the tube is then inserted a straight lens-holding tube or cystoscope. This is insulated at its distal end by a sheath of "bakelite." The lenses are arranged in such a manner that a large field of bladder can be seen, and when the cystoscopic tube is rotated to a suitable angle, the rounded metal end of the cystoscope can be seen as it projects at an angle to the main body of the instrument. Nothing then remains but to apply this large electrode under the sight of the eye to the tumour in the bladder and to destroy it completely at one sitting by means of diathermy. The largest and most powerful diathermy machine can be used with this electrode and the tumour be destroyed just as if it were exposed at an open operation. As the field becomes clouded with detritus, the bladder can be washed clear through the cystoscope without any need for the withdrawal of the sheath from the bladder. It is advisable to employ a cold lotion of oxycyanide of mercury 1 part in 4000, and to empty and refill the bladder frequently as one proceeds, otherwise the lotion may rapidly become heated to an excessive degree by the heat generated at the electrode.

I believe that this instrument presents an advance in the treatment of papilloma of the bladder. Some surgeons appear to have lost patience with diathermy and are inclined to open the bladder for papilloma. Open operation has a definite mortality, and it is always liable to risk of recurrence in the scar. Diathermy applied through the cystoscope has no mortality and leads to no risk of implanting fresh tumours elsewhere in the bladder.

As an example of what it is possible to effect by means of this instrument I can quote the following case:—

A woman was sent to me in April, 1925, by Dr. H. Fraser of Harpenden. She had an ulcerating carcinoma some tw inches in diameter lying between the right ureter and th internal meatus extending on to the right lateral wall She was suffering from severe painful cystitis and hæmaturia Under anæsthesia I burnt over the whole floor of the ulce with the new diathermy cystoscope, and then implante 12 radium emanation seeds through another cystoscope int the charred base. For some months there followe increasing pain accompanied by the passage of larg sloughs through the urethra. I examined her in November 1925. She had no pain, no hæmaturia, no increase frequency, and the urine was as clear as crystal. On inspecting the bladder with the cystoscope I could see that the malignant ulcer had completely disappeared.

This was a case that was quite inoperable by any of the older methods and might have been condemned to an early and painful death. The treatment applied has caused the ulcer to disappear and the bladder to take on the appearances and sensations of complete health.

Medical Societies.

ROYAL SOCIETY OF MEDICINE.

SECTION OF OPHTHALMOLOGY.

A CLINICAL meeting of this Section took place on Dec. 11th at St. Thomas's Hospital under the presidency of Sir ARNOLD LAWSON.

Inflammatory Deposit in Cloquet's Canal.

Mr. MALCOLM HEPBURN showed a woman, aged 33, who had a metastatic inflammatory deposit in Cloquet's canal in both eyes. A mass could be seen to be filling up the central part of the vitreous, and around this the fundus, apparently normal, was visible. He had watched the eyes for two years, but had seen no sign of inflammation. Had the appearance been due to hæmorrhage he thought it would not have been stationary, and it would not have lasted so long. He feared that there would be some shrinking of the vitreous in the future.

Central Retinitis.—Band-shaped Opacity of Cornea.

Mr. A. C. HUDSON exhibited two cases of central retinitis, showing the condition in two stages. The more advanced one he brought forward three years ago, when it was at the stage that the more recent one illustrated now. There was apparently a calcification of the retina in the macular region and some disturbance of retinal pigment. In addition, there were a number of minute bright dots scattered over the foveal region. Usually the condition was unilateral, but he had had at least one case in which a very similar state was present in both eyes. In many of these cases the vision was certainly not very seriously impaired. In several, however, the patients complained not only of defective vision, but of seeing through a violet haze or mist. One of the two patients shown to-day said he seemed to look through a green veil; both of them had a central scotoma for red. Wassermann in both was continuously negative. He suspected some form of toxic absorption, perhaps from the air-cells (ethmoid, sphenoid, or frontal sinus). After weeks, even months, of treatment the sight remained much the same. Mr. Hudson also showed a patient with a primary band-shaped opacity of the cornea, whom he exhibited first two years ago. Scraping in such case produced a good result, and there was but little reaction following the procedure. Before the operation vision was 6/18 (partly), and it was now 6/9.

Ichthyosis of the Skin with Ectropion.

This patient, also demonstrated by Mr. Hudson, had congenital ichthyosis and very severe ectropion in each eye. The right eye had been quite destroyed. In the left eye was an extensive chronic keratitis in a very irritable stage, and apparently threatening to extend. Under the circumstances it seemed unlikely that much good would follow tarsorrhaphy, as there was so much tension on the skin, and union did not seem probable. But Thiersch grafting seemed advisable, if a suitable graft could be found. He decided on taking a graft from the outer surface of the patient's arm. Instead of being supple, however, this had the consistency of parchment. Still, as a bleeding surface was left behind, it was clear that living cells had been cut through. The graft took well, and the eye was now satisfactorily closed during sleep.

"Black Cataract" and other Cases.

Mr. Hudson next showed two cases of black cataract. The woman patient was at once seen to have very widely dilated pupils, and was obviously nearly blind. With the light from the window a grey pearly reflex was seen, apparently coming from behind the lens. She said she had a severe blow on that eye, and that she lost the sight of it two years afterwards. The pupil was now inactive and the projection very bad. From the better eye he extracted a cataract. There was an enormous lens, almost the colour of a prune. Vision was now 6/18 without glasses. The man with the black cataract had a healthy fundus, and with a sphere the vision was 6/9. Usually some fundus disease was present in these cases.

Mr. Hudson showed a man with buphthalmos and neurofibromatosis of fifth nerve. Mr. Treacher Collins had suggested that the buphthalmos depended on a defective development of the angle of the anterior chamber, and not upon any peculiarity of the nerves of the eye. This man's eye was so injected and irritable that Mr. Hudson thought it ought to be removed.

Mr. Hudson demonstrated a case, shown by Mr. K. G. W. SAUNDERS, of double leukoma adherens which appeared to be unique. Curiously, the tension of the eye was not raised, for with the iris applied to the back of the cornea over practically its whole extent some increase of tension was to be expected.

Ectodermal Cyst of Iris.

Mr. P. G. DOYNE showed a woman, aged 46, who had a cyst of the iris. She attended hospital and asked for an operation to be done. Vision was full in both eyes. On dilating the eye, a dark cystic condition became apparent in the lower and outer third of the iris. It was somewhat translucent, and the eye transilluminated readily from the limbus. The tension of the eye was normal.

SECTION OF ANÆSTHETICS.

A MEETING of this Section was held on Dec. 4th, Dr. F. W. SHIPWAY, the President, in the chair, when Prof. M. S. PEMBREY, F.R.S., read a paper on

Apnœa, Dyspnœa, and Cyanosis in Relation to Anæsthesia,

supplemented by clinical remarks from the President. Prof. Pembrey described apnœa as the absence of respiratory movements. In the fœtus there is prolonged apnœa, but the fœtus born before full term is capable of breathing. This appears an exception to the rule that muscular work needs progressive training. It is not really so, for Ahlfeld has shown that muscular contractions of a rhythmic nature occur within the uterus and appear to be respiratory and due to stimulation of the medulla from gaseous interchange in the blood. A fœtal sheep was removed from the uterus without damage to the placental circulation, and stimulation of the skin did not cause respiratory movement; but the animal began to breathe directly the umbilical cord was tied. The effective stimuli result from changes in blood composition, and cutaneous stimuli are only an accessory influence on the respiratory centre whose excitability is low in the fœtus and the infant, as they can stand deprivation of oxygen and accumulation of carbon dioxide better than the adult. The young mammal retains characteristics of its cold-blooded ancestors. Apnœa is not due to oxygen excess, as has been demonstrated by observations on hibernating animals. In infants Cheyne-Stokes breathing is common and physiological. In the old, also, this type of breathing may have no relation to disease. Air containing more than 2 per cent. of CO_2 abolishes apnœa by maintaining the tension of that gas at its stimulating value. Prof. Pembrey described the postural apnœa of diving birds, reflex inhibition of respiration in drowning, and the apnœa of forced breathing. Dyspnœa, he said, is the counterpart of apnœa. The former is evidence of vigorous respiratory stimulation, the latter denotes its absence.

The PRESIDENT deplored the instruction to patients to "breathe deeply." Rapid induction of anæsthesia cannot be obtained without a sense of discomfort. Acapnia may occur during prolonged gas-oxygen anæsthesia, and can be abolished by rebreathing. A condition may arise clinically in which, although the patient is fully oxygenated, he suffers from anoxæmia, oxygen having facilitated escape of CO_2 to too great an extent. Apnœa is seldom seen during "open" ether, the administration being really a "semi-open" one. The President referred to various muscular movements and forms of rigidity due not to insufficient anæsthesia, but in reality to anoxæmia, and he related a case showing the enormous importance of the presence of mucus in the lower air passages.

The papers were discussed by Dr. S. R. WILSON, Mr. G. R. PHILLIPS, Mr. LANGTON HEWER, and others.

MEDICAL SOCIETY OF LONDON.

TREATMENT OF GENITO-URINARY TUBERCULOSIS.

AT a meeting of this Society on Dec. 14th, with Sir HOLBURT WARING, the President, in the chair, a discussion took place on the treatment of genito-urinary tuberculosis in the male.

Renal and Vesical Disease.

Mr. CYRIL A. R. NITCH, in opening, spoke first on renal tuberculosis. Bacilli, he said, reached the kidney from some other focus in the body, either a quiescent and obscure lesion such as a tuberculous mediastinal gland, or an active and obvious source such as pulmonary, articular, or osseous tuberculosis. These two sources of infection, generally speaking, gave rise to two distinct clinical types of renal tuberculosis, respectively surgical and medical. As surgical renal tuberculosis was primarily unilateral, and as spontaneous cure was practically unknown, the treatment was by early nephrectomy. Before an operation was performed the function and condition of the opposite kidney must be carefully investigated. This having been done, in an ordinary case of unilateral disease the kidney should be removed with its capsule and any adherent perinephric fat by the lumbar route. Nephrectomy was contra-indicated when the function of the opposite kidney was defective (unless the deficiency was solely due to accompanying toxic nephritis) in advanced bilateral tuberculosis, and when the disease was secondary to pulmonary or other gross tuberculous lesions. With regard to treatment of the ureter, Mr. Nitch's own practice was to remove the entire ureter whenever it was obviously diseased, with a view to preventing further infection of the bladder, and also to accelerating its recovery. In 22 cases there had not been any operative mortality, and he considered that the results justified the operation, which he described in detail with the aid of drawings. Though ureterectomy might not be considered necessary in every case, it was definitely indicated as a primary operation when the ureter was much enlarged and dilated. He spoke of 60 per cent. of cures.

Vesical tuberculosis was twice as frequent in men as in women, and was always secondary to renal or genital tuberculosis, or, rarely, to tuberculous salpingitis by direct extension from an adherent tube. The disease extended in a downward direction to the prostate, the urethra, the seminal vesicle, and the epididymis. The immediate treatment, therefore, consisted in removing either the affected kidney or the affected portion of the genital tract. When the diesase was complicated by both renal and genital tuberculosis, the kidney must be removed first and the lesion of the genital tract at a later date. The results of such drastic treatment were often so remarkably good that extension of the disease to the genital tract after nephrectomy should not deter the surgeon from a second radical operation. In many cases the bladder eventually recovered without further treatment, but in a considerable proportion pollakiuria and pyuria persisted and required both general and local treatment. General treatment consisted of rest in healthy surroundings, bladder sedatives, cod-liver oil when tolerated, and tuberculin. In his experience the best form of local treatment was surgical diathermy at intervals of a fortnight or three weeks, but the operator should aim at singeing rather than coagulating the surface. He added a few words with regard to genital tuberculosis, leaving this subject chiefly to the following speaker. In tuberculous epididymitis he found the operation of epididymo-vaso-vesiculectomy devised by Loughnane to give excellent results, and removal of a portion or the whole of the prostate was only necessary in advanced cases.

Genital Disease.

Mr. KENNETH M. WALKER said that it was impossible to discuss the treatment of genital tuberculosis without referring to its pathology. Pathology taught that genito-urinary tuberculosis was never primary, it was always the result of a focus elsewhere in the body, and most commonly in the lungs, the bones, or lymphatic glands. The post-mortem room demonstrated the frequent association of tuberculosis of the genitalia with similar lesions of the urinary system, but he was inclined to think that it was only in about 45 per cent. of cases that the urinary system was attacked in conjunction with the genital. As a rule the disease appeared first in the urinary system and then spread to the genitalia. No figures were available as to how often the disease took the reverse course, appearing first in the genitalia and afterwards involving the urinary system. Such figures would be of extreme value, for by their means one would be able to gauge the success of various forms of treatment that might be employed in cases which appeared to be pure genital tuberculosis, since it was the risk of spread to the urinary system that constituted the chief danger. His own feeling was that when a genital tuberculosis spread to the urinary system it was the bladder that became infected through the prostate and seminal vesicles, and that the appearance of a renal lesion almost always meant that the infection started primarily in the kidney. With regard to the direction taken by the disease in the genitalia, he felt strongly that the path was the same as that taken by the gonococcus or any other organism that was known to attack the urethra primarily and the epididymis by secondary spread down the cord. Blood-borne infections of the testicle almost invariably affected the testis first, but in tuberculosis, as in gonorrhœa, the lower pole of the epididymis was the site at which a lesion first appeared. Personally he regarded the prostate and vesicles as playing a very sinister part in the spread of tuberculosis from the urinary to the genital system. If it were not for these structures a tuberculous testicle would be as rare as a tuberculous ovary. He gave figures which furnished evidence in favour of the descending route of infection; the spread of the disease was, he believed, from the prostate or vesicles to the epididymis rather than in the reverse direction.

A rational treatment based on this pathology must recognise two important points. The first was that reliance could not be placed entirely on surgery, but that general constitutional treatment was as important as local extirpation by the knife Indeed, in many cases surgery was entirely supplementary to treatment by means of open air, cod-liver oil, tuberculin, "artificial sunlight," &c. I the case was one of pure genital tuberculosis the tendency was towards encapsulation and cure Genital tuberculosis was on the whole a benign disease It was genito-urinary tuberculosis rather than pure genital disease that did badly. In the presence of urinary disease constitutional treatment alone failed utterly. The spontaneous healing of a focus in the kidney was a rare event, and the only hope of salvation was in surgery. The first step, therefore, in the treatment of a patient suffering from genital tuberculosis was to make sure that no disease existed in the urinary system. Should a focus be found in the urinary tract surgical measures must be adopted, and once the urinary condition had been satisfactorily dealt with an improvement would take place in the genital disease and constitutional measures would begin to have effect. The second lesson to be drawn from the pathology was that if the theory were accepted that the disease started in the prostate and vesicles and spread to the epididymis, even such a wholesale measure as castration must fail to eradicate the disease. Should it be the aim of the surgeon to remove entirely the infected tissue, he could only do so by means of a complete extirpation of the genital tract. Whatever might be thought of Mr. Hampton Young's radical operation, it was the only logical one from the point of view of complete removal of infected tissues. To remove the testicle and vas as far as the internal ring and to leave behind an infected prostate and vesicle was an incomplete operation; it might be justifiable provided it was recognised that all that had been done had been to remove grossly infected tissues in order to assist the body in overcoming the infection that still remained. The speaker was in favour, whenever possible, of performing an epididymectomy rather than an orchidectomy. It was surprising how little the patient appeared affected by epididymectomy, and should the opposite epididymis become infected later the patient gladly submitted to what he regarded as a very trifling operation. But epididymectomy or even orchidectomy generally left behind central lesions in the prostate and vesicles, and the only logical operation if it was the intention of the surgeon to extirpate the disease by means of the knife was the complete excision of the genital tract. This was so severe a measure that it should be reserved for exceptional cases, in which other measures had failed, and the patient was obviously going downhill. In the majority of cases the only surgical measures required were epididymectomy, orchidectomy, the opening of abscesses, and the scraping of sinuses.

The Pathological View.

Dr. S. R. **Gloyne** pointed out that his experience of renal tuberculosis was chiefly confined to the medical form frequently associated with pulmonary tuberculosis. This form generally showed small tubercles n the cortex and beneath the capsule, and was almost certainly a blood infection of an embolic nature. He also dealt with a number of points with regard to laboratory examination of urine, &c. He suggested that there was probably more than one species of smegma bacillus and that various workers appeared to differ considerably in their technique of differentiatng this bacillus from *B. tuberculosis* by decolorisation with alcohol. The only safe way of differentiation appeared to be by making careful controls with different amounts of decolorisation, by comparing with known cultures of *B. tuberculosis* and by taking care in obtaining clean specimens by catheter. There seemed to be definite evidence that true tubercle bacilli could be excreted by the kidneys without lesions in renal tissue. Cases were also occasionally recorded in which there were tubercle bacilli present n the urine without casts or pus cells, but it was generally possible to find pus cells if adequate centriugation was employed. In doubtful cases it was mportant to collect and sediment the whole of the urine passed during 24 hours. The animal inoculation est was not entirely satisfactory. Cases of renal uberculosis were sometimes found in which guinea-pig inoculation failed, and there was always the difficulty of having to wait two or three weeks or ven longer for a result. Secondary infections in enal tuberculosis were probably commoner than was generally supposed. With regard to treatment, it was difficult to estimate the value of tuberculin in all hronic forms of tuberculosis, and renal tuberculosis was a good example of this difficulty. To give very small doses was the only safe rule. Sanocrysin and other chemotherapeutic remedies derived from the heavy metals were liable to produce toxic nephritis and were not likely to offer much scope in renal tuberculosis. There occasionally appeared to be some evidence of spontaneous healing of small tuberculous lesions in the kidney and from time to time cases of cure were reported, but the speaker considered that in his experience the 2 per cent. of clinical healing given by Keyes in his recent text-book was excessive. In conclusion, not only was early diagnosis of renal tuberculosis essential, but also a careful search for other foci of disease. The complement-fixation test might be relied upon when it was positive, but negative reaction was of no value.

Discussion.

The **President** mentioned a case which had come within his experience of apparently spontaneous healing of renal tuberculosis, verified by surgical discovery of a calcareous nodule in the kidney.

Mr. **Jocelyn Swan** agreed with Mr. Nitch that a patient with a bad tuberculous kidney, even with tuberculous infiltration in the vesicle and prostate, was a perfectly good surgical risk, and could be cured. He would raise Mr. Nitch's estimate of 60 per cent. of cures to 75 per cent. His own operation, which he described in detail, varied a little from that described by Mr. Nitch, but he agreed that the whole length of the ureter should be removed at the same time as the kidney was removed, because otherwise the operation would be incomplete, leaving virtually a test-tube of tuberculous material in the ureter. In the case of the bladder the post-operative treatment was just as important as the operative. Generally speaking, vesicular tuberculosis was secondary to renal or genital tuberculosis, but he had seen one case which was undoubtedly primary tuberculosis of the bladder. The less one did in the way of local treatment of the bladder the better; once the primary focus in the kidney was removed, it was astonishing how the bladder condition cleared up.

Dr. **Nathan Raw** said that in cases of primary pulmonary tuberculosis it was remarkably rare for the kidney to be affected. On the other hand, in cases of primary genito-urinary tuberculosis the number of subsequent infections of the lung was larger. On the question of tuberculin he had come to the conclusion that although this was an extremely valuable remedy it ought not to be prepared from toxic cultures. He would strongly urge that cultures which had been attenuated should be used.

Mr. J. E. H. **Roberts** mentioned the rarity of genital tuberculosis among patients who were the subjects of the pulmonary condition. In operating he had, as a rule, removed the testis, epididymis, and cord as far as the internal ring. In most of the cases there was tuberculosis also in at least the vesicle on the same side, and also definite nodules in the prostate. After the operation he treated by means of therapeutic X rays applied to the vesicle and prostate and to the course of the vas between the internal ring and the vesicle. In every case the rapid disappearance of the lesion after X ray treatment had been surprising. A necessary preliminary, of course, was to remove surgically any large masses of tuberculous disease present.

Dr. **Rolf Creasy** said that every speaker had rightfully emphasised the necessity for beginning with very small doses of tuberculin, but it was not until the big doses were gradually worked up to that the beneficial effects would be felt.

Sir **Henry Gauvain** remarked on the rarity of the condition amongst children. Out of some 4000 cases which had passed through his hands at Alton, he could recall only two of renal tuberculosis.

Mr. **Nitch**, in replying, said that in assessing his figure of 60 per cent. cures after ureterectomy he had included only those cases in which 24 hours' specimens of the urine had been obtained and showed no pus, and, of course, no tubercle bacilli.

Reviews and Notices of Books.

Manipulative Surgery.

Principles and Practice. By A. G. Timbrell Fisher, *M.C.*, F.R.C.S. Eng., late Hunterian Professor, Royal College of Surgeons of England; Surgeon, Seamen's (Dreadnought) Hospital, Greenwich. London: H. K. Lewis and Co., Ltd. 1925. Pp. 168. 7*s.* 6*d.*

The astonishing advances which have taken place during the last 40 years in the more scientific aspects of surgery have had one unfortunate result—they have tended to obscure the importance of those simpler methods of manipulation upon which our fathers had so largely to depend. They have, indeed, aroused a positive antagonism between those who are trained in the surgeon's art and those who depend for their results on the skill of their hands and the quickness of their wits. In the present volume an attempt has been made to explain the means by which the bonesetter has sometimes succeeded in confounding the man of knowledge, and to reduce manipulative surgery to something approaching a scientific basis. Commencing with a short discussion of the pathology and diagnosis of the minor disabilities of the joints, Mr. Fisher proceeds at once to a detailed description of their manipulative treatment. Taking first the knee-joint, upon which he himself has done a great deal of original work, he discusses various joints and their disabilities in great detail, illustrating his remarks by descriptions of typical cases and with photographs which make his meaning abundantly clear. The book should be of value to all who have to deal with injuries of the joints, and it may help to remove from surgery a not entirely unmerited reproach.

Gynæcological and Obstetrical Monographs.

Appendix (1925). London and New York: D. Appleton and Company. 1925. Pp. 224. 12*s.* 6*d.*

These monographs were published in America in 1922. Each of the 15 volumes was written by a recognised authority on the subject and the whole series then constituted an excellent survey of this important branch of medicine. During the past two or three years many important contributions to the literature have been made, and the authors of the various articles have at the request of the publishers furnished the material which has brought the subject-matter of each volume up to date. This material is now incorporated in one volume as an appendix and forms an exhaustive review of recent work both in America and on this side of the Atlantic. An extensive bibliography with numbered references is appended and should prove valuable to the student and the research worker. We can recommend this book not only to those who possess the original set of monographs but also to those who are interested in recent advances in obstetrics and gynæcology.

Physics.

The Spectroscopy of X Rays. By Manne Siegbahn, Professor in the University of Upsala. Translated with the Author's additions by George A. Lindsay, Assistant Professor of Physics in the University of Michigan. London: Humphrey Milford, Oxford University Press. 1925. Pp. 287. 20*s.*

No book could better exemplify the readiness of the scientific world to make use of a discovery than this one by Prof. Siegbahn. In 1912 Laue discovered the way to measure the wave-lengths of X rays. In spite of the war years, investigation was pursued on the subject, and to-day the spectroscopy of X rays is of such importance as to warrant a text-book to itself. Here we have an excellent one, of which the scope may be inferred from the titles of the chapters. Following a summary of our knowledge of X rays up to the time of Laue's discovery, there are chapters on the Interference of X Rays, Technique of X Ray Spectroscopy, Emission and Absorption Spectra, Theories of X Ray Spectra, the Continuous X Ray Spectrum, and a chapter on the Inner Energy Levels of the Atoms. There is, of course, abundance of material here far beyond the ordinary needs of the medical radiologist, but for purposes of reference he will find the book worthy of a place beside Rutherford's "Radioactivity" on his shelf. The section dealing with spectroscopic apparatus is, however, of special interest, for medical men have often wished to avail themselves of some type of instrument which would give them ocular demonstration of the radiations they are using, and, in this book, they will find the various types well described and their particular merits differentiated.

The translation has been done by Prof. G. A. Lindsay and, on the whole, deserves warm praise. The book is a very valuable one; it is written by one who has contributed largely to the elucidation of the subject and meets a want which has been felt for some years.

Photo-Electricity, the Liberation of Electrons by Light. With chapters on Fluorescence and Phosphorescence, Photo-Chemical Actions, and Photography. Second edition. By H. Stanley Allen, M.A., D.Sc., F.Inst.P., F.R.S.E., Professor of Natural Philosophy in the University of St. Andrews; sometime Senior Lecturer in Physics at University of London, King's College. London: Longmans, Green and Co. 1925. Pp. 320. 18*s.*

Prof. Allen's Photo-Electricity now appears in a somewhat enlarged form, not too cumbrous, however, for easy reading. The subject-matter is not restricted to photo-electricity—i.e., the liberation of electricity by light—but includes chapters on Fluorescence, Phosphorescence, Photo-Chemical Actions, and Physiological Effects. Perhaps the last named is the section, brief as it is, which will appeal particularly to medical readers. Among the various physiological reactions discussed in this connexion is that of vision. The author says: "It is sufficient to suppose that photo-electric action takes place in the chemical substance (or substances) contained in the rods or cones, such separation of electrons resulting in electrification of the nerve-cells which sets up the nervous impulse to the sensorium. The changes in the retina on this view are identical with those in a phosphorescent substance or in the formation of a latent image on the photographic plate. The after-images seen in the dark after viewing a brightly illuminated object are analogous to phosphorescence, the excitation of the retina being due to the separation of electrons, the after-image to their return." While there is little escape from the probability of photo-electric action of the retina under appropriate stimulus, its mere recognition can hardly, we feel, be put forward as a theory of vision. The book is furnished with a bibliography of scientific papers, published from 1913–24, relating to photo-electricity, which should prove of considerable use to readers.

La Physique des Rayons X, à l'Usage des Médecins. Par Loisel, Préparateur de Physique à la Faculté de Médecine; et Lomon, Radiologiste des Hôpitaux, Chef des Travaux pratiques de Physique à la Faculté de Médecine. Préface du P. André Broca. Paris: Masson et Cie. 1925. Pp. 150. 10*s.*

This book on the physics of X rays for the use of doctors will prove useful to them, though they may think that the facts of gaseous ionisation are more easily grasped unassociated with mathematical treatment. The book is divided into three parts: the first is devoted to a description of the means of production of X rays; the second is upon the nature and properties of the rays; and the third contains very useful information upon gas tubes and Coolidge tubes. Perhaps in a future edition the author will amplify this outline. There is such an accumulation of radiological data to which medical men may want to turn that we think more categorical information could usefully be introduced into this excellent little book.

HIGH FREQUENCY IN OTO-RHINO-LARYNGOLOGY.

La Haute Fréquence en Oto-Rhino-Laryngologie. By LEROUX-ROBERT, late Assistant in Oto-Rhino-Laryngology at the Salpêtrière. With a Preface by Professeur D'ARSONVAL. Paris: Masson et Cie. 1925. Pp. 166. Fr.15.

THE results of surgical diathermy, or diathermo-coagulation, are well known to laryngologists in this country; indeed, of its effects in cancer of the pharynx, Dr. Leroux-Robert remarks that "the English authors are very convinced, the French authors more reserved." Of this use of high-frequency currents the author of this little book gives a good description; he lays stress on the absence of cicatricial contraction, and recommends employment of this method for many conditions beside malignant growths, and especially for stenosis and contracted cicatrices. Thus, he considers it a particularly suitable method for the treatment of synechiæ in the nasal fossæ, for stenosis of the anterior nares, congenital occlusion of the choana, and for cicatricial contraction of the palate and fauces. Far less convincing is his recommendation of the method in the treatment of obstruction of the Eustachian tube, of stenosis of the larynx, and of multiple laryngeal papilloma after thyrotomy. There is a short account of the use of sparking currents, or fulguration, but the greater part of the remainder of the book deals with medical or diffuse diathermy, and the application of high-frequency discharge from vacuum electrodes, the so-called "effluve" or "violet ray" applications. The author uses the former for chronic and tuberculous laryngitis, and for middle-ear catarrh; and the latter for a large variety of affections, including lupus, eczema, and cutaneous nasal troubles, hypertrophic rhinitis, and ozæna, migraine and sinusitis, tonsillitis, middle-ear catarrh, oto-sclerosis, tinnitus, and vertigo. The use of this form of high-frequency current is obviously only on its trial, and it may be said with certainty that it will not be found to cure or relieve all these conditions. Dr. Leroux-Roberts would doubtless agree to this, and he deserves credit for experimenting in a method which may prove fruitful in some directions. But it would have been better if he had been more exact in the statement of results in this new field, and had given statistics of all cases treated instead of merely describing a few selected cases. He is most enthusiastic on the treatment by "effluve" of ozæna, of which he states that the fœtor disappears, and that no other treatment appears to be so efficacious; and of tinnitus he concludes that "darsonvalisation ought to be tried in all cases with a very great prospect of improvement or cure."

The book includes observations of other workers, the references being given in footnotes; it is written with the enthusiasm of a pioneer, and will be of interest and assistance to those wishing to experiment with the application of the different forms of high-frequency currents to various diseases of the nose, throat, and ear.

EPITHELIOMA OF THE SUPERIOR MAXILLA.

Traitement des Épithéliomas du Maxillaire Supérieur par l'Association Chirurgie-Curiethérapie. Par le Dr. G. VERGER, ancien interne des Hôpitaux de Paris. Paris: Gaston Doin et Cie. 1925. Pp. 204. Fr.22.

THIS monograph deals entirely with epitheliomatous tumours involving the superior maxilla, and with their treatment by a combination of surgery and radium. A description of the pathological anatomy of these tumours is followed by a discussion of their treatment by pure surgery and by radium without operation, and the conclusion is reached that neither method is effective when used alone. The author then describes in detail the surgical technique of A. Hautant and O. Monod, followed by their method of applying radium to the cavity which has been left. This method has been followed in all cases treated at the Institut Curie. In eight cases where the growth was limited to the superior maxilla and the ethmoid, five remained well after periods varying between two and four and a half years. Where a growth is more extensive such good results cannot, of course, be expected, but the author still regards them as encouraging. The author concludes with a description of 43 cases of various types, the value of which is enhanced by the fact that in every instance they have been followed up for considerable periods after operation.

DESIGN AND COMPOSITION IN LINE FORM AND MASS.

By FREDERICK J. GLASS. London: University of London Press, Ltd. 1925. Pp. 175. 10*s.* 6*d.*

THIS is a very interesting book; while, incidentally, it is full of exact instruction for craftsmen, the author's general conclusions are wide, constituting almost a philosophy of æsthetics. There is nothing perhaps in one of the most important chapters, that on landscape composition, which is new, but what may be termed the laws of picture-making, as applied to landscape, are thoroughly well expressed, and their practical value can be apprehended. It is, as the author says, dangerous to formulate rules in art, but despite this there are certain rules of which all those who practise the art of landscape painting ought to be aware. Certainly let those rules be broken for good reasons, and the more sincere and more experienced the painter the more often will he be able to disregard the very existence of rules; but lawless pictures from fervent and learned hands are the finished expression of composition, and not to be confused with the anarchistic messes of those who break rules out of ignorance or insolence. We recommend this book to those of our readers who have found in drawing not only a pleasant recreation but more than occasionally a useful adjuvant to medical studies.

BABIES.

By A. G. G. THOMPSON, M.A., M.D., D.P.H. London: Humphrey Milford, Oxford University Press. 1925. Pp. 32. 1*s.*

ADVICE offered to those untrained in precise or accurate thinking should, above all things, be definite. In this respect Dr. Thompson's little book for the young mother is one of the best we have seen. His style is racy and original and his conclusions are clear-cut. Regularity for both mother and child is emphasised as the keynote of good management, and some sound advice is included as to the advantages of proper organisation in running the home. For the expectant mother good food is broadly described as being fresh food as opposed to that which is tinned, bottled, or preserved. As to the food and clothing of the baby, Dr. Thompson lays the greatest stress upon the infant's own behaviour, which will indicate both how much food and how much clothing are required; he holds that the infant may be relied upon to point out clearly any errors in these matters, but it cannot always be easy to understand the infant's diagnosis or interpretation of symptoms. Dr. Thompson has a particular dislike to the use of biscuits and cakes, which he forbids alike to the expectant mother, the baby, and the older child; milk puddings, he considers, should be postponed until the child is 2 years old, though suet puddings are well liked and digested at 18 months. More than once in the book mothers are warned against resorting to medicine as a cure for the ills of infancy. In cases of digestive trouble, "medicines should come last, not first"; for guarding against colds, "fresh air is the only real chest strengthener and lung tonic"; in connexion with constipation, "the practice of giving a dose of castor oil or any other form of aperient regularly once a week, whether there is any bowel irregularity or not, has nothing whatever to recommend it." A specially useful paragraph is one giving careful directions as to the proper way of blowing the nose, and the damage to the ear-drum which may result from careless nose-blowing of a little child with a cold. The instruction on care of the ears is also valuable. Not all doctors will agree with the statement that a baby's mouth should be cleaned out with a piece of soft, clean rag dipped in warm water; but this is an isolated piece of controversial advice amongst a wealth of orthodox wisdom.

The book may be recommended to mothers as a guide to keeping their babies healthy.

JOURNALS.

Quarterly Journal of Medicine.—The October number contains the following articles: Intestinal Diverticula, by E. I. Spriggs and O. A. Marxer. The appearances of intestinal diverticula, as shown by X ray photographs after an opaque meal, are illustrated by a series of nine plates. In 1000 consecutive X ray examinations on the alimentary tract, intestinal diverticula were found in 143 patients. They are more common in the large than in the small intestine, but may occur in any portion of the latter. Treatment is usually efficacious if directed to the lubrication and efficient action of the bowels, and to improvement in the general health of the patient.—The Relative Prevalence of So-called Endocarditis Lenta Before and After the War: A Survey of 195 Cases, by Gladys C. Wauchope. The conclusions drawn from this article are based on a study of the incidence of endocarditis lenta amongst patients at the London Hospital during the years 1907 to 1924. 195 such cases were recorded, of which 125 came to autopsy. There was found to be a considerable increase in the incidence of this disease in males after the war, the maximum number being observed in the year 1922. In females such a post-war rise was not noted, and the increased rate in the male sex was due to cases occurring amongst ex-soldiers.—The Clinical Syndrome of Thrombosis of the Coronary Arteries, by J. W. McNee. Thrombosis of a large branch of the coronary arteries is not necessarily immediately fatal; in fact, the patient may survive for many years. The author observed three cases of this nature in Baltimore, and a clinical description is given of the main features of the disease. Various references to the American literature dealing with coronary thrombosis are included, and the article is illustrated by two plates showing the macroscopic and microscopic appearances of the heart.—The Excretion of Chlorides by the Healthy and Diseased Kidney, by O. L. V. de Wesselow. The capacity of the kidney for chloride concentration was investigated in a series of healthy individuals and in certain cases of nephritis. It is suggested that there are two groups of cases of nephritis with œdema. In one, the typical parenchymatous nephritis, the chloride plasma content is low, but the œdema fluid is rich in chlorides. The water and chloride pass quickly from the blood to the tissues owing to abnormal capillary permeability, and the œdema is of extra-renal origin. In the other group, which includes acute nephritis, pre-eclampsia, and some cases of prolonged nephritis in which there is œdema without effusion into the serous sacs, the œdema is of renal origin and secondary to failure of water excretion.—Some Observations on the Action of Belladonna and Neutral Fats on the Acidity of the Stomach Contents, by W. Morrell Roberts. By means of the fractional method of gastric analysis it was found that the chief effect of the administration of atropine and belladonna in cases of hypersecretion is to lower acidity by relaxing the pylorus and increasing the normal duodenal regurgitation and rate of stomach emptying. Oil appears to have an opposite effect, delaying the rate of stomach emptying and inhibiting duodenal regurgitation. There is, therefore, a tendency for gastric acidity to rise, and some evidence was also obtained of increased gastric secretion. These changes were not usually found until late in digestion, and after the period at which the one hour test-meal would be withdrawn.—On Sulphæmoglobinæmia, by Lawrence P. Garrod. Two cases of this disease are described, in both of which Mackenzie Wallis's nitroso-bacillus was obtained in culture from the stools. Treatment by large doses of an autogenous vaccine resulted in recovery in each instance, after which the organism could no longer be found in the stools.—The Clinical Aspect of Bundle Branch Block, by John Cowan and J. Crighton Bramwell. A series of 24 cases of bundle branch block are recorded, in all but one of which the right branch of the bundle was affected. The lesion is comparatively rare before the age of 40, and the onset is usually insidious with symptoms of heart failure. Once established it is generally permanent, although it has been noted as a transitory phenomenon. Bundle branch block can only be recognised by means of an electrocardiogram. Post mortem the lesion usually found is a fibrosis resulting from a diminished blood-supply. More rarely it follows an infective process, and the relative preponderance of lesions affecting the right bundle may be due to differences in the blood-supply on the two sides. The right branch of the bundle is supplied by a specific branch of the left coronary artery, which is frequently degenerate, whereas the left branch receives vessels from both of the coronary arteries. The article is illustrated by a series of electrocardiograms.

Biochemical Journal. Vol. XIX., No. 5. 1925.—Among the articles in this issue are many papers of interest to the general medical reader. In a Note on the Presence of Glutathione in the Corpuscles of Mammalian Blood, H. F. Holden has demonstrated the presence of this body in concentrated protein-free filtrates of mammalian blood. He brings strong evidence to show that the lævorotatory powers of this substance probably account for the experimental observations of L. B. Winter and W. Smith. Holden states that the cause of the difference between the rotatory and reducing powers of blood is probably not due to the presence of an unstable sugar, but to this body.—J. A. Milroy has described a method for estimating the blood-sugar by a simple technique involving the use of one of the nitro-anthraquinonesulphonic acids.—The effects of X rays upon normal rats and rats immune to Jensen's rat sarcoma has been studied by E. C. Dodds, W. Lawson, and J. C. Mottram. It was found that there were very marked differences in the response of these two groups of animals.—O. Rosenheim and J. C. Drummond describe further developments of their work upon the colour secretions of cod-liver oil. They state that if the oil be shaken up with arsenic chloride a blue colour results. The chromogenic substance is intimately associated with the vitamin A content, since inactive oils do not give the reaction.—An ingenious apparatus for grinding tissues anaerobically is described by W. A. Roach.—Sir Frederick Gowland Hopkins has written a very complete summary of the influence of glutathione in the oxidation of fats and proteins. The author states that his article must be regarded as a "prolegomenon to publications from this laboratory which will appear in the near future"; his communication is of the utmost importance to workers in this field.—C. P. Stewart and A. C. White call attention to the unsatisfactory position of the subject of blood fat from an experimental point of view. They have elaborated certain modifications of methods of estimation which they claim to overcome most difficulties.—F. Dickens, E. C. Dodds, and S. Wright have reopened the question of the ovarian hormone. As they state, very little advance upon methods of preparation has been made since Hermann and Frankel published their work in 1915. In the present paper a workable method of preparation is described, together with observations on the properties of the hormone. It has been shown that the hormone has an inhibiting action upon the effect of insulin.

THE LANCET.

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REMOVAL OF NAMES FROM THE MEDICAL REGISTER: THE LEGAL POSITION.

Classical scholars have written their theses on the civic effect and meaning of *infamia* in Roman times. Doubtless, after another 2000 years some antiquary will be writing of the professional meaning of "infamous conduct" in our Medical Acts to-day. Meanwhile, it may be convenient to recapitulate the legal authorities which bear upon the action of the General Medical Council in erasing names from the Register under the provisions of Section 29 of the Act of 1858, for it is clear that many who have been criticising the action of the Council recently have done so without information. The language of Section 29 is familiar and so is the dependent course of events. If a registered medical practitioner is convicted of felony or misdemeanour, "or shall after due inquiry be judged by the General Council to have been guilty of infamous conduct in any professional respect," the Council may, "if they see fit," direct the erasure of his name.

The first remark to be made is that the Medical Act sets up a special statutory tribunal which is not part of the ordinary judicial system of the country, but which is to apply professional standards of the nature of which it is aware and the law courts are not. The tribunal is quasi-judicial. Provided that there has been due inquiry of a bona-fide kind, the law courts have no jurisdiction to review its decisions. Thus, in 1863, in the case of S. La'Mert,[1] a name was removed from the Register after an inquiry into charges connected with the publication of a treatise on venereal disease, and the courts refused to interfere. The Council had formulated its accusation, had communicated it to La'Mert, had received his explanation, and had given him an opportunity to be heard in his defence, though not by counsel. La'Mert moved the Court of Queen's Bench for a rule calling on the Council to show cause why a mandamus should not issue to command them to restore his name to the Register. This was the occasion on which Chief Justice Cockburn laid down the principle that under Section 29 the Medical Council are sole judges of whether a practitioner has been guilty of infamous conduct or not. "This Court," he said, "has no more power to review that decision than they would have (in the present mode of proceeding) of determining whether the facts had justified a conviction for felony or misdemeanour under the first branch of the section. The Council have found the applicant guilty after due inquiry, and, *whether the facts justified the finding or not,* the Council is the tribunal to whom the Legislature has left the decision as being the best judges in the matter. This Court cannot interfere." That was definite enough, but the same decision was enunciated afresh in 1889 in the case of Henry Arthur Allbutt (23 Q.B.D. 400), who similarly sought a mandamus to compel the restoration of his name after erasure. Allbutt fitted a second string to his bow. He sued the Council for libel over the publication of their findings in his case. Baron Pollock said the Council had sole jurisdiction under the Act and his Court was powerless to review the decision. The Court of Appeal agreed and reaffirmed what Chief Justice Cockburn had said in La'Mert's case. The claim for libel was equally unsuccessful. "It was admitted," said Lord Justice Lopes, "that the report of the finding was truthful, accurate, and honestly published bona fide and without malice, not an ex parte report, but a report of facts which had been finally ascertained and adjudicated upon." If the mere fact of erasure had been stated, it would clearly have been privileged; the privilege could not be lost merely because the reason for the erasure was given. Thus, in 1889 the finality of the Council's decisions under Section 29 was completely established; it has never since been judicially questioned.

Has a practitioner whose name has been erased no remedy then? The answer is "No, not unless there has been bias on the part of the tribunal or some irregularity of procedure," as for example, if the Council omitted to frame charges, or to inform the practitioner of what was alleged against him, or to give him a chance to reply. As to bias, a person who has a pecuniary interest in the result of an accusation cannot adjudicate upon it, and it is a well-founded legal principle that public policy and natural justice forbid an accuser to be also a judge. Light was thrown upon this point in J. F. Leeson's case (1889, 43 Ch. D. 366), where Lord Justice Bowen said the crucial question was whether in substance or in fact one of the judges has actually been an accuser. This dictum has since been interpreted by Lord Esher ([1894] 1 Q.B. p. 759) as meaning that a judge's position must be such that in substance and fact he cannot be suspected. Not that any perversely-minded person cannot suspect him, but that he must bear such a relation to the matter that he cannot reasonably be suspected of being biased. This was not quite the same view as Lord Justice Fry had taken in Leeson's case, that learned judge having never lost an opportunity of advancing impeccable moral standards. The principle has been more broadly stated: "It is highly desirable that justice should be administered by persons who cannot be suspected of improper motives" (Mellor, J., in Regina *v.* Allan, 4 B. & S. at p. 926). Or as Lord Reading, and more recently Lord Hewart, put it, it is not enough that justice should be done; it is essential that it should seem to be done. The question of bias in members of the tribunal arose in Leeson's case from the membership by two of the Council of the Medical Defence Union and this was the main point in Allinson *v.* General Council of Medical Education and Registration ([1894] 1 Q.B. 750). T. R. Allinson advertised himself in a flagrant manner. He inserted in newspapers answers to real or imaginary correspondents as to the treatment of complaints and he gave his own name and address, his fees, his writings, and their prices. He also systematically vilified his own profession—"professional poisoners, for I can call doctors by no truer name." Here is a sample of Allinson's announcements: "Send a postal order for 5*s.* with a stamped directed envelope, and I will send you private postal advice that will benefit you." The Council very properly resolved to remove him from the Register. He applied for an injunction to prevent this, and, when his application failed, went to the Court of Appeal where he failed again. His material ground was bias on the part of the tribunal. The late Sir George Philipson, who represented Durham University on the General Medical Council, and who had been one of those who adjudicated in the case, had also been a vice-president of the Medical Defence Union which had instituted the proceedings against Allinson. Sir George Philipson, as a vice-president, was an ex-officio member of the committee of the Union, but did not attend its meetings and was unaware of the proceedings. He had actually resigned from the Union at the material date in the case, though technically his resignation did not take effect till afterwards. The Court of Appeal held that he was not disqualified as an adjudicator, though in Leeson's case Lord Justice Bowen had said it was undesirable that members of the Council who adjudicated should be subscribers to the society which instituted and conducted the proceedings.

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[1] Law Journal Reports, xxxiii., Q.B. 69.

If a practitioner whose name has been removed from the Register has any grounds for alleging that the tribunal was biased or the proceedings irregular, his legal remedy is to apply for an injunction to stay the hands of the General Medical Council or for a mandamus to compel the restoration of his name. In this connexion it may be observed that the Council has no express statutory power to restore a name (except in one particular contingency under Section 14 of the 1858 Act). But it is assumed—no doubt rightly—that any body which exercises functions such as those assigned to the Council can vary or rescind its own decisions. The Council will restore a name in a proper case, but this is not a matter of legal compulsion. Indeed, even if a name has been erased for felony and the conviction is afterwards shown to have been erroneous, there is no power to compel what the Council would doubtless concede, and has in fact conceded.

As is well known, the Privy Council has a general power of supervision over the General Medical Council. But it is not to be supposed that a man whose name has been removed from the Register can appeal with any prospect of success to the Privy Council either in its executive capacity or in its judicial capacity. The Judicial Committee of the Privy Council has high authority as an appellate tribunal, and His Majesty under an Act of 1833 has a general power to refer to the Judicial Committee any issue which he may think fit. But it may be taken for granted that, while the Supreme Court refuses to review the decisions of the General Medical Council, the Judicial Committee will never be called upon to act as a Court of Appeal in this respect. The supervisory power which the Privy Council wields over the General Medical Council is to be found in Section 19 of the Medical Act of 1886. That section runs as follows :—

> "If at any time it appears to the Privy Council that the General Council has failed . . . . to exercise any power or perform any duty or do any act or thing vested in or imposed on or authorised to be done by the General Council under the Medical Acts . . . . , the Privy Council may notify their opinion to the General Council ; and if the General Council fail to comply with any directions of the Privy Council relating to such notification, the Privy Council may themselves give effect to such directions, and for that purpose may exercise any power or do any act or thing vested in or authorised to be done by the General Council. . . . ."

This means that, supposing the General Medical Council did not maintain its Register and did not strike off it the names of practitioners who are convicted of felony or are guilty of infamous conduct in a professional respect, the Privy Council might conceivably take over the Register and the power of inquiring into professional misconduct and of removing the names of the guilty. But it does not mean that the Privy Council can meanwhile intervene to say "You shall not inquire into A's case, or you shall re-try B's case, or you shall restore C's name to the Register." The Privy Council might influence the general policy and outlook of the Medical Council by appointing to the latter body from time to time representatives who are known to favour a fresh policy. Or the Government might set up a Committee or a Royal Commission to consider whether the present constitution of the Medical Council is sufficiently elastic or too institutional, and whether the statutory provisions as to maintenance of the Register require modification. But any change would necessitate fresh legislation, and no Government is likely to legislate on such a matter without the full assent of the profession.

Finally, we come to the vexed question "What is 'infamous conduct in any professional respect ?' " Historically, the word infamy has, in English law, meant the condition of being deprived of the rights of citizenship in consequence of conviction for certain crimes. Persons who were in this sense infamous were, until they had served their sentence or been pardoned, disqualified for public appointments or public pensions, and incapable of serving as jurors or sitting in Parliament or giving evidence in a court of law. This last incapacity was removed by the Evidence Act of 1843, and the expression "infamous crime" survived as a sort of synonym for the crime specially known as abominable. The expression can be seen as late as 1861 in Section 46 of the Larceny Act of that year (extortion under threat to accuse of crime). But when that section was superseded by the Larceny Act of 1916, the words were dropped. The historical associations of the word "infamous" are irrelevant when it is used in Section 29 of the Medical Act, because of that significant addition "in any professional respect" on which the law courts have laid so much stress. Just as under the ancient laws of England, if a citizen committed some anti-social offence he was placed outside the pale of society, so now under the Medical Act, if a registered practitioner commits a grave offence against the rules of his profession he may be placed outside the body of professional men who agree to be bound by those rules. Nor let it be forgotten that it is the British tradition to rely upon each trade or calling or service to maintain its own standards. The Army Act punishes with cashiering officers who behave "in a scandalous manner unbecoming the character of an officer and a gentleman" ; the Naval Discipline Act punishes with dismissal from the service any officer who is guilty of "conduct unbecoming the character of an officer." These robust phrases, deliberately vague, depend for their interpretation not upon the law courts, but upon courts martial consisting of the accused man's brother-officers. The law courts have, as Sir Donald MacAlister reminded us, given help in interpreting "infamous conduct in any professional respect." Lord Justice Lopes, in Allinson's case ([1894] 1 Q.B. at p. 763), recalls how he, Lord Esher, and Lord Justice Davey prepared what is now the classic definition : "If it is shown that a medical man in the pursuit of his profession has done something with regard to it which would be reasonably regarded as disgraceful or dishonourable by his professional brethren of good repute and competency," then the Council can say he has been guilty of infamous conduct in a professional respect. The question, as Lord Esher said earlier in the same case, is not whether what a doctor has done would be infamous for anyone else to do, but whether it is infamous for a medical man to do. An act done by a medical man may be infamous, though the same act done by anyone else would not be infamous ; on the other hand, an act not done "in any professional respect" is not within the section.

Times change and standards alter with them. The Council can, if it likes, decide that methods of advertisement hitherto considered objectionable shall in future go unpunished or shall even be regarded as consistent with the traditions of an honourable profession. If this position is desired by members of the profession which the Council represents, it will eventually be attained. Pressure may come from within or from without, but the official reply on behalf of the Lord President of the Privy Council to a question in the House of Commons on Dec. 8th does not indicate official dissatisfaction. That reply ran—"The Medical Council, since its creation in 1858, has performed the duties entrusted to it without serious criticism, and as at present advised my noble friend does not think that sufficient reason has been shown for setting up a committee of inquiry." We believe that any clear-headed and unprejudiced member of the public, who should follow, as we have done, the actual proceedings in the disciplinary cases, would agree that the recent outcry against the Council's use of its powers has been unjustifiable. Most of the offenders have not been unduly punished, and the minority, convicted of less serious infractions, have been restored to the Register in generous measure.

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PENSIONS FOR SALARIED HOSPITAL STAFFS.

A COMPREHENSIVE and generally acceptable scheme of pensions for the salaried officers of voluntary hospitals is long overdue. King Edward's Fund has been giving serious, if more or less intermittent, attention to the subject ever since 1914, and had it not been for the disturbing effects of the war there might have been some definite outcome of the pains it has devoted to the subject. The growing need for action is emphasised by the publication last week of a memorandum, summarised on another page, setting out a draft scheme of pensions prepared by a conference representing the King's Fund, the British Hospitals Association, the Incorporated Association of Hospital Officers, and the College of Nursing. Generally speaking, the scheme follows the lines laid down by the committee of the King's Fund, over which Mr. W. J. H. WHITTALL, F.A.I., presided, but the conference carefully guards itself from any expression of opinion upon the merits of the proposals. It is naturally sympathetic to the principle of a pension scheme, but leaves the details to the consideration and criticism of the hospitals. For many reasons it has hitherto been found difficult to induce English hospitals to take concerted action on matters of general moment to them, and it would be unduly sanguine to expect immediate action upon these revived proposals. Every year, however, the subject presses more urgently, and the growing scarcity of nurses makes it more than ever important that a settlement should be reached without serious further delay.

The existing situation is at once unbusinesslike and chaotic. An official may be pensioned comparatively early or decidedly late; the amount of the pension is dependent upon the views of some committee or board of governors, and an official who leaves one hospital for another loses all claim upon his late employers and may not live long enough to establish one upon the new. What is needed is a system which attaches pension rights to the vocation and not to the service of a given institution. To nurses this is of almost vital importance, since most of those who begin their careers in hospitals end them in some other milieu. The pay of nurses, although somewhat improved, is still, and is, unhappily, likely to remain, inadequate to the provision of any real protection in old age. It is unreasonable to expect a constant flow of the right type of probationer in response to no better prospect than poverty when hard work is no longer possible. To talk to her about the sacredness of her calling and the glory of self-sacrifice in such circumstances is a mockery. Under the scheme now set out the nurse would take her policy with her, as would the secretary or the accountant or any other hospital official. The Federated Superannuation Scheme for Universities is taken as the model, and under it the hospitals would contribute 10 per cent. of salary and emoluments and the beneficiaries 5 per cent. The whole of the salaried staff, administrative, clerical, and dispensing, as well as the nurses, would be included, though the probationer nurses would not come in until the end of their first year. There would be a choice among three types of policy—a fixed rate of annuity at the retiring age or a sum of money at previous death; deferred annuities with eturn of premiums on premature withdrawal or death; and deferred annuities without return of premiums. Nurses would become pensionable at 55, which may be a reasonable age for the purpose, though we are not certain of this. But would it be equally reasonable to pension secretaries and other officers at 60 as the scheme proposes? That is earlier than the Civil Service limit, and in these days the number of men who remain active and full of work and initiative at long after 60 is far greater than ever it was. To put back the age three or even five years would not be unfair to the beneficiaries, would substantially strengthen the plan, and would ensure a larger yield. The extent to which operative effect is given to the proposals depends upon the hospitals—not so much upon the goodwill of the governors, which may be taken for granted, as upon their finances. An addition of 10 per cent. to the amount paid in salaries would often be serious, but sooner or later it will have to be done, and we are not entitled to exploit long and willing service of a type in which there is nearly always a basis of altruism. But it would be of little use for a hospital here and there to come in. What is needed is the all-round adoption of this or some closely similar scheme after it has undergone the criticism of hospital authorities generally.

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FATIGUE AND INFECTION.

THERE is a general impression that resistance to infection is associated with the bodily state which comes from a good intake of food combined with a moderate amount of muscular work, and Dr. LEONARD HILL has preached pretty convincingly that the beneficial effects of fresh air are due to, or at least connected with, the increase of general metabolism which is produced. Whether this is really so is one of the most important problems which the economics of dietetics has to solve, though the smallness of the quantities of food and activity which have to be measured makes it unlikely that an answer will easily be found to the question whether it pays people to eat the little excess over their minimum requirements which they generally do on an unrestricted diet. Less food and less exercise cost less; the habits of mankind suggest that they are more expensive in the long run. Similarly common opinion reckons that excessive fatigue and a sedentary life both favour infection, and the latter idea, at least if it is practised without a correspondingly meagre diet, is backed by the practice of some insurance companies whose experience has taught them to look with suspicion on those who are too heavy for their height. Some experimental observations made by the late Dr. R. A. SPAETH [1] do something to elucidate these problems. He and his colleagues had previously obtained the seemingly paradoxical result that rats and guinea-pigs, forced to take exercise to exhaustion, were more resistant to pneumococcal infection than normal animals. He now shows that rats which are kept "in the pink" by living in cages where they can and do take spontaneous daily exercise for their own enjoyment are rather less resistant than the controls despite their apparently splendid physical condition. He then points out that guinea-pigs which are starved till they have lost about as much weight as they would if exercised to exhaustion are more resistant than normal, and suggests that the influence of exhausting exercise on infection is related to the anabolic restoration of weight rather than to the fatigue itself or to any products of fatigue. This is supported by the observation that fatigue does not increase resistance unless the animal is allowed to eat immediately afterwards; this it does voraciously. The experiments as a whole afford an interesting commentary on the proposition that using the body promotes resistance to infection. They need repetition and amplification, and the eating habits of the experimental animals make it difficult to transfer the experience to man who, under civilised conditions at any rate, generally finds that a hearty meal is a mistake when he is very tired. The fact that starvation helps resistance under the conditions of the experiments finds a parallel in the observations[2] of Dr. J. A. ARKWRIGHT and Dr. S. S. ZILVA that similarly reduced animals give a small local inflammatory response to irritants, for infection is dependent on the response of the body as well as on the presence of the parasite. There is something in asceticism which wants analysis.

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[1] Amer. Jour. of Hyg., 1925, v., 839.
[2] Jour. of Path. and Bact., 1924, xxvii., 346.

LONDON COUNTY COUNCIL: DEBATE ON ASSESSMENT FOR TUBERCULOSIS TREATMENT.—Dr. Stella Churchill was last week responsible for initiating a prolonged debate at the meeting of the London County Council on the assessment of contributions in respect of residential treatment of tuberculosis. In the course of the debate, it was freely asserted that the Council had no legal right to exact contributions from patients or those legally responsible for them, that only poor and ignorant people consented to payment, and that even where payment was point-blank refused the Council had no power to withhold treatment. The whole subject of assessment has been under review by the Public Health Committee of the Council, who tabled a recommendation that no change be made in the present methods. Dr. Churchill moved as an amendment that "no contributions be required by the Council in respect of residential treatment of tuberculosis under the Council's scheme whether for children or adults," and quoted details of several cases where, she alleged, the assessment had inflicted great hardship on the families concerned. Dr. Alan Randle, in supporting the amendment, declared that the money exacted by the Council might well be left with the families, in order to tide over the difficult period when the breadwinner was in a sanatorium, to relieve the patient of anxiety while undergoing treatment, or to be accumulated for the purchase of nourishment when the patient was discharged and temporarily unable to work. Many patients, he said, insisted on discharging themselves from sanatoriums, against the wishes of the authorities, purely because of anxiety as to their home conditions during their absence. From the Labour benches the threat was made that, unless the Public Health Committee agreed to modify or abolish assessments, the greatest possible publicity would be given to the fact that the Council was powerless to enforce payment. Dr. Churchill's amendment was defeated on a division and the recommendation of the Committee was carried. The present method of assessment will, therefore, continue unchanged.

Annotations.

"Ne quid nimis."

VOLTAIRE AND MEDICINE.

IN a paper on this subject, of which he read the second part before the Section of the History of Medicine of the Royal Society of Medicine last Wednesday, Dr. J. D. Rolleston, the President, discussed Voltaire's relations to individual doctors and the medical profession as a whole, and gave some account of Voltaire's illnesses. Apart from small-pox, influenza, and pneumonia, Voltaire did not appear to have had any acute infectious disease. He was subject to chronic dyspepsia from an early age, and frequently suffered from catarrhal bronchitis, often associated with deafness. His death at the age of 84 was probably due to uræmia following cystitis due to enlargement of the prostate. Throughout his life Voltaire was brought into contact with medical men on many occasions, both professionally and socially, the best known of his medical attendants being Silva, physician to Louis XIV., Boerhaave, and Tronchin. Dr. Rolleston pointed out that the passages in which Voltaire indulged his satirical humour at the expense of the medical profession were few in comparison with those in which he expressed admiration and gratitude, and apart from his stories were mainly to be found in his correspondence where they were not to be taken too seriously. In striking contrast with Molière's works, in none of Voltaire's plays did a doctor figure as one of the *dramatis personæ*, nor were there more than one or two vague references to medical matters in any of them. Voltaire was scathing in his denunciation of quacks and quack remedies, such as "potable gold," the "balm of life," and Arnould's sachets for epilepsy, and vented his ridicule on many superstitions and erroneous doctrines connected with normal and morbid processes. Dr. Rolleston quoted numerous passages from Voltaire's works illustrating his advocacy of inoculation for small-pox, his interest in the history and ravages of syphilis, his attention to other matters connected with public health, his acquaintance with medical jurisprudence, and particularly his sceptical attitude towards historical cases of poisoning and his description of various disease of social importance, such as mental disease, convulsive hysteria at the tombs of saints and ecclesiastics, alcoholism, and the king's evil. His interest in public health was shown not only by his desire to control contagious diseases, such as small-pox by inoculation and syphilis by the formation of an international league—a project not realised till the foundation of the "Union internationale contre le peril vénérien" 150 years later—but also by his allusions to other epidemic diseases, especially plague, typhus, and malaria, his condemnation of the insanitary condition of the Paris hospitals, the abuses connected with the administration of military hospitals, the crowded state of the Paris cemeteries, and the practice of burial in churches, as well as by his proposal to found maternity hospitals for unmarried women. In conclusion, Dr. Rolleston maintained that Voltaire, the founder of modern history and the most representative figure of the eighteenth century, deserved the attention of the medical reader in that he was a powerful advocate of the profession and an uncompromising foe of quackery, and by reason of his keen intellect and wide humanitarianism was well in advance of his time in matters connected with public health, medical jurisprudence, and social medicine.

MALARIA AND PARTURITION.

TWO workers attached to the Sir Alfred Lewis Jones Research Laboratory at Freetown, Sierra Leone, have made the interesting observation[1] that the placental blood of parturient native women is frequently the site of an intense infection with the subtertian malaria parasite—*Plasmodium falciparum.* Dr. Blacklock and Dr. Gordon examined in the course of this study 150 parturient women aged from 15 to 42, and of these 55 proved to be infected; of these only ten showed infection of both peripheral and placental blood; of the remaining 45 the placenta alone was infected. It is probable that in these cases the parasites remain localised to the placenta, but it is a curious and important point that in no child born of a malaria-infected mother were parasites found either in the cord or peripheral blood. The difference between the placental and peripheral incidence of malaria infection is ascribed, in all probability, to a peripheral blood immunity, and therefore, as a source of infection to others, these intensely infected women can be disregarded as a danger. Of the 144 children who were born alive in the series under consideration, 51 were born of malaria-infected mothers, and 13, or 25·5 per cent., died within seven days of birth, a very much higher percentage than of the children born of non-malarious mothers. In spite of this, it is a remarkable fact that no evidence of infection of the children with malaria parasites derived from their mothers could be adduced; a statement which appears to be in opposition to the views of Liemann and Swellengrebel, who record a large number of cases of congenital malaria, and attribute a high proportion of infantile deaths to it. Dr. Blacklock and Dr. Gordon, on the other hand, attribute the ill-effects, undoubtedly produced in the child, to toxic substances absorbed from the intensely infected placenta of the mother and to the interference with the proper nutrition of the fœtus brought about by this parasite. There is no evidence, they think, that there exists any tolerance to malaria on the part of the child, but the absence of parasites in the peripheral blood may be ascribed to freedom from infection, for after the first month of life parasites may be found when the child has had the opportunity of developing fever as the result of bites by infected anophelines.

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[1] Malaria Infection as it Occurs in Late Pregnancy: its Relationship to Labour and Early Infancy. By D. B. Blacklock and R. M. Gordon. Annals of Tropical Medicine and Parasitology, vol. xix., No. 3, Sept. 30th, 1925.

THE MEDICAL STAFF OF THE PUBLIC HEALTH SERVICE.

PUBLIC health administration leaves a good deal of room for local initiative. In his annual report for 1924 Dr. Ralph M. F. Picken, medical officer of health for Cardiff, points out that the problem of the most effective use of the medical staff in the diverse functions of a modern health department is becoming more and more complicated. He goes on to say that the easiest administrative arrangement is to allocate one or more medical officers to a particular section of the work, but that the effect of such a method is to create water-tight compartments in which the staff are apt to lose the wider outlook. "The more varied the work, the more stimulating and interesting it is." With a view to attaining the highest ultimate efficiency the staff of the Cardiff health department are each employed in as many branches of the work as it is possible to arrange, even at considerable administrative inconvenience. Dr. Picken suggests that the practice of sanitary authorities farming out some of the most important and interesting sections of the clinical work has a paralysing influence on the mental development of the whole-time medical staff, but that at the same time such farming out puts the highest specialist's skill at the disposal of the sanitary authority. In order to remove the drawback mentioned and to retain the interest of the whole-time medical staff, arrangements have been made at Cardiff to associate the assistant medical officers with that part of the clinical work of the institutions which is financed by the corporation. A similar problem crops up with regard to the nursing staff. For example, the tuberculosis officer likes to employ his own nurses and to have as few changes as possible; the school medical officer and the maternity and child welfare medical officer have a similar bent. It must be better, however, for the mental development of the public health nurse (and ultimately for the service) if she has the opportunity of becoming familiar with the work of every department. Many people will therefore agree with Dr. Picken when he says that "the organisation would be improved if it were found administratively convenient to amalgamate the school medical staff and the health visitors as has already been done in the case of the medical staff." In a paper on Coöperation between Public Health Officers and the General Practitioners by Dr. Picken,[1] which appears as an appendix to his report, the opinion is expressed that a bold and comprehensive scheme of coördination is needed to bring these two sections of medical practice into working contact, and that any such scheme should make it as easy as possible for men to transfer themselves from the public health service to general practice, and vice versa, if they find they have chosen the type of work which is not their vocation. Obviously there will always be more heads of departments than there are administrative chiefs, but the arrangements made at Cardiff should enable a man with administrative ability to obtain the experience necessary to qualify him as a medical officer of health of the front rank.

THE DEATH-RATE FROM DIABETES.

IT is still too early in the period of insulin therapy to attempt to predict in any detail what the effect of the use of this substance will have on the death-rate from diabetes. The fact that diabetic coma so far from being inevitably a fatal complication is now so brilliantly treated by insulin will obviously have the immediate effect of reducing the number of deaths reported from diabetes, but it is possible that another effect will be the postponement of the end of a certain number of patients, so that in a few years' time the actual number of deaths from diabetes will show an increase. These and other considerations must therefore be borne in mind in any discussion of this subject, but even so the present death-rates from diabetes in different countries show very marked differences, and in a recent paper[2] Dr. E. P. Joslin has analysed the death-rate from this disease and its complications in Massachusetts, and compared these with corresponding figures for London with very interesting results. He finds, for example, that in 1923 the death-rate from diabetes in London per 100,000 was 9·51 and in Massachusetts 21·4, and, further, the increase in the diabetic death-rate from 1880 to 1923 in London was really threefold, while in Massachusetts it was fourfold. He therefore maintains that in that State there is an acute diabetic problem which must be solved along the lines of preventive medicine. Further analysis of the figures for these two population groups shows that the increase in Massachusetts is particularly found in the older decades, and Dr. Joslin urges that one of the principal prophylactic measures is to get patients to eat less and take more exercise in order to avoid obesity. The State Department of Health for Massachusetts has definitely entered upon a campaign to eradicate diabetes, which is of great interest, since here it is dealing both with a non-infectious disease and with one which is not particularly concerned with the young. One of the measures adopted has been the distribution of a bottle of "doctor's emergency insulin" for the doctor's bag, made possible by the generosity of Mr. John D. Rockefeller, jun. With this bottle is sent careful instructions for the treatment of diabetic coma which is still the chief cause of death in diabetes, and an interesting feature of these instructions is the scheme suggested for estimating the amount of insulin required in any particular case. This is based upon the probable duration of life without insulin as estimated by full clinical considerations. If this is in the neighbourhood of 24 hours, 20 units of insulin are given, and repeated every hour until the clinical improvement and sugar in the urine and blood is approaching normal. If the patient's expectation is 12 hours, 40 units would be used, and if death appears to be imminent, 40 units of insulin can be given every 15 minutes. The other complications of diabetes which must be attacked—for it is a well-known clinical fact that very few diabetics die of uncomplicated diabetes—include cardio-renal affections, gangrene, tuberculosis, and carbuncles, and in all of these cases Dr. Joslin hopes for a reduction of the death-rate when accurate dietetic treatment and the necessary medical and surgical coöperation in certain of the conditions are satisfactorily established, which state of affairs, he hints, has not yet been attained.

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[1] Medical World, Feb. 20th, 1925.

[2] The Boston Medical and Surgical Journal, Oct. 15th, 1925, p. 707.

RESIDENCE AND DISEASE.

AN inquiry of some interest carried on among University students in America has just been published.[1] It was undertaken to obtain some measure of the value of urban health practices. The measure used is the past history of diseases among the students, classified according to the size of the community in which childhood was spent. Every care was taken to ensure that the information gathered was as accurate as possible. The communities were grouped as (*a*) rural, (*b*) villages of 50 to 1000 population, (*c*) small towns of 1000 to 5000, (*d*) small cities of 10,000 to 50,000, and (*e*) large cities of 50,000 and over. In a previous communication[2] the authors reported finding physical defects high in (*a*), (*b*) and (*d*), low in (*c*), but lowest in (*e*). Apparently classification of mortality and morbidity records may be vitiated if all populations below 25,000 are considered rural and all above as urban. Records were obtained of 5031 students, of whom 3478 were men and 1553 were women. Seventeen diseases, including all the infectious fevers of childhood, were prevalent enough to classify in the table here reproduced:—

Table showing Percentages, according to Residence Groups, of 3478 University Men, giving Histories of Certain Diseases.

Past diseases.	Rural (358)*	Villages (299)*	Towns (605)*	Cities.		Total (3478)*
				Small (379)*	Large (1837)*	
Measles.. ..	62·9	*88·0*	62·0	69·1	55·8	61·8
Mumps ..	46·4	*65·2*	47·6	53·8	45·4	48·5
Diphtheria ..	4·5	6·7	5·1	*10·8*	9·6	8·2
Scarlet fever..	12·6	14·1	*15·0*	10·6	14·5	13·9
Chicken-pox..	24·0	*45·8*	38·2	40·1	39·6	38·4
Small-pox ..	*11·2*	10·7	10·1	8·7	7·3	8·6
Whooping-cough ..	31·3	*39·1*	34·4	32·7	32·8	33·5
Influenza ..	35·5	*42·2*	35·1	34·1	21·1	28·2
Pneumonia ..	*12·6*	9·7	11·2	10·3	12·1	11·6
Pleurisy ..	*5·9*	3·7	3·6	4·8	3·2	3·7
Tuberculosis	*1·7*	0·7	0·8	1·3	1·4	1·2
Typhoid fever	2·2	*4·7*	3·5	4·5	3·0	3·3
Appendicitis	8·4	*10·1*	7·8	10·0	6·3	7·5
Tonsillitis ..	18·2	20·1	21·2	*29·8*	20·8	21·5
Rheumatism	*7·6*	5·7	4·6	4·8	4·8	5·2
Chorea	0·3	0·0	0·5	0·5	*0·8*	0·6
Nervous break-down.. ..	1·7	*2·0*	1·0	0·5	0·6	0·9
Total ..	287·0	368·5	301·7	326·4	279·1	296·6

* The figures in brackets indicate the number of students in each group.

The figures in italic represent the highest percentage for each disease.

The female records, although rather few for analysis, support the tendencies of the male records. The order for all diseases, or for the infectious diseases alone, is the same: cities best, followed by rural, towns, and small cities, with villages worst. Thus cities stand out favourably both for histories of diseases and physical defects, and small cities come out unfavourably by both measures. The order of importance of the diseases is interesting with measles leading easily, and mumps a good second. In this country typhoid and small-pox would probably not appear in such histories. The percentage which is highest for each disease is italicised in the table. Pneumonia is curiously high in rural, with great cities a close second. Villages claim far too many firsts, but are lowest for pneumonia. Some evidence may be found in these studies to support the thought that, at any rate in America, modern hygiene is capable of making the populations of great cities the most healthy and vigorous part of the community, even in advance of the oft and frequently extolled rural yeoman class. The records, however, on which the evidence is based, refer only to a favoured portion of the population in each residence group, and not to the total populations; they are evidence of what might be done for the whole, rather than of what is being done.

THE MEDICAL DIRECTORY.

THE eighty-second annual issue of the Medical Directory, which has just appeared,[1] does not differ materially from its predecessor except that it has been brought scrupulously up to date. A single misprint of a Swiss health resort has escaped the watchful eye of the press-reader on both occasions—that is the only blemish we have noticed. The numerical summary of the medical profession shows an increase of 1802 on the previous year in the total number of names contained in the Directory, being an addition of 3·6 per cent., well in excess of the annual increment in the population of the British Isles. This increase is distributed fairly evenly over six sections of the Directory, only the Services showing a small diminution. In the section of useful information preceding the Directory appears a monograph on the spas and climatic health resorts of Great Britain and Ireland. The whole section has been recast and partly rewritten, and is accompanied by a number of illustrations. The list of certified masseurs belonging to the British Association, introduced last year, has increased in length, and the lists of personnel of the Ministry of Health, Medical Research Council, and Central Midwives Board have been shifted into the middle of the volume between London and the Provinces. The new issue will take its place on the shelf as an indispensable book of reference.

MASSAGE IN THE TREATMENT OF MIDDLE-EAR DEAFNESS.

IT would seem reasonable to expect good results from massage in certain diseases of the middle ear, especially in cases of recent exudation and of chronic adhesions and thickening of the drum membrane and even, it might be, in the earliest stages of otosclerosis. Many years ago Delstanche, of Brussels, designed an apparatus for this purpose, consisting of a small hand pump with a length of flexible tubing attached to a terminal fitting into the external auditory meatus; by alternately rarefying and compressing the air in the meatus the membrana tympani is moved outwards and inwards. For this work he was awarded the Lenval Prize for having designed the best instrument for the relief of deafness. This method, called pneumo-massage, has been modified by attaching the pump to an electric motor, or to a geared-up machine worked by hand, so that the rapidity of the movement may be greatly increased and, judging by the numerous instruments of this kind on the market, this form of treatment has been very extensively used. But, unfortunately, the movement may only affect the more mobile portions of the drum membrane, while having no effect on adhesions, and there is no proof that any motion is conveyed to the chain of ossicles, especially when unduly rigid or fixed by pathological changes. Sometimes tinnitus is diminished, the sense of weight or oppression relieved, and even the hearing temporarily improved; but this form of massage cannot be said to have added much to our power of treating chronic deafness. Manual massage of the side of the neck and the upper cervical spine has also been used, and the Swedish exponents of massage have employed their methods for the relief of aural disease. In Vienna Dr. Michael Braun [1] is enthusiastic on the treatment of progressive deafness by a method of manual massage which he has designed; this consists in massage of the nares, nasopharynx, and Eustachian tubes with wool-tipped probes, and of the auricle, tragus, and external meatus with the fingers. His method of Eustachian massage has received the endorsement of Prof. E. Urbantschitsch, and he claims to have obtained improvement of hearing and relief of tinnitus in some very advanced cases of middle-ear deafness.

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[1] A Comparison of Past Diseases in University Students. By W. P. Shepard and H. S. Diehl. Journal of Industrial Hygiene, November, 1925. See THE LANCET, Dec. 5th, 1925, p. 1176.

[2] A Comparison of Physical Defects in University Students. By the same authors. Jour. Amer. Med. Assn., 1924, lxxxiii., 1117

[1] London: J. and A. Churchill. 1926. 30*s*.

ARSENIC IN APPLES.

IN 1892 Miss Eleanor Ormerod ("Text-Book of Agricultural Entomology") referred to "the method of spraying caterpillar-infected leafage with Paris green which has long been found serviceable in the United States and Canada," adding that it "should never be applied to fruit or to vegetables that are used for food." The Ministry of Agriculture and Fisheries (Leaflet 352) advises the use of "lead arsenate either just before or just after the blossoming period (on no account when the flowers are open)." That such compounds well distributed over foliage would discourage the hardiest leaf-eating insect seems hardly open to discussion, but the use of such very poisonous substances in the preparation of potential food-products must introduce grave risks when the spraying is done after the blossoming period. To depend upon wind and rain for the removal from the surface of apples of the arsenical compound is surely light hearted, and there is the further danger of diffusion into the substance of the fruit. The recent prosecutions of Hampstead tradesmen for selling Jonathan apples containing from 1/30 to 1/15 gr. of arsenic in a pound show that the risk is a real one. Out of 16 or 17 samples purchased five contained 1/100 gr. or upwards of arsenic. It appears that the prosecutions were undertaken as the result of a complaint of illness after eating apples and not because the medical officer or public analyst were seeking new activities. These cases raise again in an acute form the ever-recurring question of the "doping" of foods. A normal sounding meal may easily contain quite considerable doses of boric, benzoic, salicylic, and sulphurous acids and synthetic dyes in the earlier courses and the drinks, and now the dessert may contribute its quota of arsenic. It is urged in the case of arsenical apples, as in all such cases, that the amount is small—well below the maximum dose. Further, it is pointed out that by peeling the apples all danger is avoided. There are many people who believe that the full flavour of an apple is not to be obtained when it is peeled, and there are many boys and even adults who, given opportunity, might easily take, if not a lethal dose, sufficient to cause serious illness, as, in fact, people in Hampstead appear to have done. Two other aspects of the case are worthy of consideration. The unhappy family doctor will have new perplexities in diagnosis and the poisoner will be able more effectively to raise the defence of arsenic in apples than was a well-known advocate 80 years ago who attempted to prove that his client's victim had been killed by natural poison in apple pips. On all grounds the presence of arsenic in apples is to be discouraged, and it is to be hoped that the appropriate Ministries in apple-growing and exporting countries will take measures to reassure the public. The apple is a delightful and important article of food, and the fruit trade between this country and the United States is large. The Minister of Agriculture and Fisheries has stated in the House of Commons that the danger of poisoning arising from the spraying of apple trees is negligible. It may be so in English apples.

THE IRISH CENSUSES OF 1926.

AN Irish census, writes our Dublin correspondent, was due to have been taken in 1921, but on account of the disturbed state of the country at the time it was thought wise to postpone the attempt to take it. With the boundary of the Free State jurisdiction unsettled, no step was taken by either the Free State Government or the Government of Northern Ireland until recently. Both Governments have now decided to take censuses next April, and it is stated that the officials in charge of the census in the two areas have agreed to proceed on similar lines. If this intention is carried out, then the joint result will practically be a census of all Ireland. At a recent meeting of the Statistical and Social Inquiry Society of Ireland, Prof. C. H. Oldham, President, delivered an address on Reform of the Irish Census of Population. He pleaded for a simplification of the census, and suggested that some of the information heretofore collected in the census returns should be obtained otherwise. Statistics in regard to agriculture and land might more properly be collected by the Department of Agriculture, and those in regard to education by the Department of Education. He urged also that the census of religious professions should also be omitted or the enumeration left to the several churches. It is to be noted that neither the English nor the Scottish census has, in the past, collected any of these three classes of figures. Prof. Oldham thought also that the informative value of the census would be much increased if comparisons with other countries were widely given. In the discussion which followed Prof. Oldham's paper it was pointed out that the statistics collected in previous censuses as to the number of sick on census night were so fallacious as to be worse than useless. Moreover, the grouping of diseases was meaningless. The Department of Local Government and Public Health, which is charged with the duty of carrying out the census in the Free State, has invited suggestions from learned bodies and from persons interested in statistics.

KING EDWARD'S HOSPITAL FUND.

AT a meeting of the President and Council of this Fund it was announced by the Prince of Wales that the amount of the ordinary distribution had been raised from £235,000 to £245,000, apart from the grants out of the Wells legacies, which accounted for an additional £57,000 this year. The area covered by the Fund is now 380 square miles, and the number of hospitals helped is now 133. The fact that the hospitals as a whole show an annual surplus instead of the large deficit which caused such anxiety five years ago, is a cause for legitimate satisfaction. Continuous effort is, however, essential, inasmuch as every important advance in medical science and every additional bed involves increased expenditure.

WE regret to announce the death at his London home in his eighty-fourth year of Sir Richard Douglas Powell, Physician-in-Ordinary to the King and consulting physician to the Middlesex and Brompton Hospitals.

Colonel Percy S. Lelean, R.A.M.C. (retd.), Home Office Inspector under the Cruelty to Animals Act, and lately professor of hygiene in the R.A.M. College, has been appointed professor of public health in the University of Edinburgh.

UNIVERSITY OF CAMBRIDGE.—Upon the recommendation of the Special Board of Biology and with the sanction of the Financial Board, the Senate have agreed that the income from the benefaction of the late Mr. Grant and the corresponding benefaction of the trustees of the Rockefeller Foundation, should be made available for the general purposes of the Department of Pathology during the current academic year.

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[1] Wiener Medizinische Wochenschrift, 1925, No. 48.

Modern Technique in Treatment.

A Series of Special Articles, contributed by invitation, on the Treatment of Medical and Surgical Conditions.

CLII.—THE TREATMENT OF IMPETIGO CONTAGIOSA.

Impetigo contagiosa has the distinction of being the commonest of all skin diseases, the preponderance being even more obvious in hospital than in general practice. Fortunately, in most cases its treatment presents no great difficulty.

Routine Method.

The principle upon which successful management of the condition is based consists in a frequent removal of the characteristic "stuck on" scabs by bathing, followed by the use of almost any weak antiseptic ointment. The most popular and most satisfactory application is an ointment of ammoniated mercury, 10 gr. to the ounce of vaseline. The routine of treatment has become so stereotyped that in many out-patient departments printed leaflets with the necessary directions are kept for distribution to the out-patients. The scabs are to be bathed off with warm water thrice daily and the ointment applied immediately. It is not advisable to cover the affected part (unless necessary to protect it against rubbing) with a dressing or bandage. Healing seems to take more quickly if the sores can be allowed to remain exposed to the air. Possibly this is because the streptococcus, the causal organism, grows best anaerobically. The essence of the treatment, then, lies in the frequent removal of the scabs by bathing, and this measure alone without any application of ointment would be sufficient to bring about healing in most cases, although perhaps more slowly than when assisted by the use of ointment. In any case the procedure indicated above is invariably successful in an ordinary attack such as is commonly seen on a child's face, the most typical situation of the disease. But in special circumstances and situations the method may be modified with advantage.

Modified Methods Suited to Special Conditions.

Pemphigus Neonatorum.—For example, in very young infants I am inclined to think that boric ointment is preferable to a mercurial ointment, even if very weak, because it is less likely to be irritating to the tender skin. In the newly born there sometimes occurs a condition known as pemphigus neonatorum. In this, as the name suggests, the tiny transitory vesicles of impetigo are replaced by large blisters. Unlike ordinary impetigo, although apparently caused by the identical streptococcus, this is a very dangerous disease and often ends fatally. Here boric baths are useful and it is sometimes possible to prepare and use an autogenous vaccine with good effect. But in bad cases this disease runs a very rapid course and the issue may be decided before the vaccine can be got ready.

Impetigo of the Scalp.—On the other hand, in impetigo of the scalp, the skin of which is less easily irritated than that of the glabrous regions, it is advisable to use a stronger ointment than usual—e.g., the ordinary unguentum hydrargyri ammoniati of the British Pharmacopœia, the strength of which is 25 gr. to the ounce. Moreover, it is to be remembered that impetigo of the scalp is very often secondary to pediculosis, and by using a fairly powerful mercurial ointment the primary disease may be cured at the same time.

Impetigo of the beard region is often awkward to deal with. On the one hand it is inclined to be aggravated by the daily shave, and any slight abrasion of the skin facilitates the spread of the eruption, while if the beard be allowed to grow the dried and encrusted discharge clings round the stubby hairs and makes it very difficult to keep the surface clean. Perhaps the best course is to compromise and to instruct the patient to shave on alternate days and to be careful to use a weak antiseptic solution (e.g., biniodide of mercury solution in a strength of 1 in 4000) both before and after shaving to lessen the chance of auto-inoculation. For the same reason it is wise not to attempt too close a shave, but the razor should always be very sharp as nothing irritates a tender skin so much as the pulling of a dull blade. Most men refuse to put ointment on their faces during the daytime, but they should be encouraged to bathe the face frequently with boric lotion to remove the quickly forming crusts, and they can at any rate employ ointment at night. Impetigo of the beard region is especially important because if neglected or unwisely handled it can easily become complicated by the advent of a secondary staphylococcic infection resulting in the production of furuncles, while simultaneously the whole surface of the skin becomes inflamed and erythematous. In short, we then have presented to us the clinical picture known as *sycosis*, a condition notoriously difficult to treat successfully. In cases of impetigo of the beard region the help of the pathologist and the early preparation of a vaccine may be extremely useful in preventing this untoward development.

Cracks and Fissures.—Another troublesome and sometimes obstinate development of impetigo is the formation of painful cracks or fissures, either at the corner of the mouth, in the vestibule or at the angle of the nose, or behind the ears. They sometimes seem to arise quite apart from any obvious impetiginous eruption, but bacteriological investigation shows that they are caused by the same type of streptococcus as is associated with frank impetigo and consequently can be considered as of like nature. Sometimes they heal up with simple ointments, but are prone to recur. I have known fissures resistant to the weak ammoniated mercury ointment which yield to it when 10 gr. of resorcin are added to each ounce. The stick of lunar caustic is often useful, especially if the fissure is bordered by rather exuberant granulations. This, as a rule, only happens when the crack is situated at the corner of the mouth and extends on to the mucous membrane. In more obstinate cases I have almost always found that one or two small doses (half a pastille) of X rays will promote sound healing and I have also had good results from ionisation with zinc.

Impetigo Secondary to Other Complaints.

A word of warning is necessary as to the treatment of impetigo when secondary to other complaints, such as eczema or scabies. When eczema is complicated by impetigo, which frequently happens in occupational eczema of the hands, the treatment of the impetigo, which is an integral part of the management of the case, must be conducted so as not to aggravate the primary disease. It is advisable in such cases to remove the scabs by soaking them off with olive oil or liquid paraffin rather than by bathing with water or watery solutions of antiseptics. In such cases, too, boric ointment is usually found to be more easily tolerated than a mercurial preparation.

When impetigo is grafted upon scabies, the primary disease is often effectually masked. It is important to be on the watch for this combination of eruptions as it is useless to treat the impetigo while neglecting the scabies. On the other hand, if the usual method of treating scabies be employed the impetigo will often disappear pari passu, and in any case will be favourably modified. Any widespread impetiginous eruption, in which the buttocks, groins, and axillæ are implicated, should put the practitioner on his guard, and any septic and pustular eruption on the hands is exceedingly likely to be secondary to scabies.

In babies and young children widespread impetigo may also be secondary to that common eruption which causes so many sleepless nights to children between the ages of 2 and 6 years, and to their parents, and which rejoices in so many names—e.g., gum-rash, strophilus, urticaria infantum, lichen urticatus,

&c. Here the secondary impetigo is very important because it forms part of a vicious circle. It aggravates the original disease, and consequently causes increased irritation and scratching, leading to more impetigo. The treatment of urticaria infantum itself, often a difficult problem, lies outside the scope of the present article; boric baths and boric ointment form the best method of attacking the impetigo, and when this has been subdued the little sufferers are often greatly relieved even as regards their urticaria.

H. Haldin-Davis, M.D. Oxon., F.R.C.S. Eng.,
Dermatologist to the Royal Free Hospital.

Special Articles.

ROYAL COMMISSION ON LUNACY AND MENTAL DISORDER.

(*Continued from p. 1085.*)

The Commission resumed its sittings at Old Palace Yard, Westminster, on Dec. 10th, Mr. H. P. Macmillan, K.C., presiding.

Supplementary Evidence of the Board of Control.

The witnesses attending were Sir Frederick Willis, Dr. Hubert Bond, and Mr. S. J. F. Macleod, all representing the Board of Control. The Chairman explained that these gentlemen had been asked to attend for the purpose of giving their views on certain general questions on which the Commission had been taking evidence, in supplement of the submissions which that Board made at a much earlier stage of the proceedings. He added that it might be necessary for the Commission to make some novel recommendations. The chief spokesman was Sir Frederick Willis. Asked specially about the incipient and the voluntary classes of case, Sir Frederick Willis said that the matters and views he was about to express had been very fully discussed by his colleagues on the Board, and they represented the views of the Board. It was desirable that patients suffering from mental illness should be divided into the following three classes: (1) voluntary, (2) non-volitional but passive, (3) resistant. This classification was based on an immense amount of experience in dealing with mental disorders. The Board thought the voluntary case might be received for treatment on his own written application (if under 18 years, on that of a parent or guardian), accompanied by one medical recommendation, into any mental hospital or nursing home, or into private care, subject to certain conditions.

Voluntary Cases.

The Chairman said that patients in the first of these classes realised the situation concerning themselves, but those in the second category were in a somewhat peculiar position as to the exercise of any restraint, for such restraint in their case would be illegal. It would really be treating a patient who had no volition without authority. Sir Frederick Willis replied that it was suggested that authority should be given by Act of Parliament. He said that the conditions suggested by the Board for these voluntary cases were: (*a*) notification of the admission of the case, with a copy of the medical recommendation, should be sent to the Board; (*b*) a medical report on the case should be sent to the Board within seven days of the admission, and thereafter at six-monthly periods; (*c*) should the Board have the right to inspect the place where the patient was being treated; (*d*) should it have the right to order the discharge of a patient from the voluntary class if their judgment warranted it; (*e*) if at any time the patient ceased to possess real volition and this defect continued, he should be, within a month, either dealt with under the provisions relating to the passive or resistant cases, or should be discharged; (*f*) that the patient should have the right to leave the treatment place at any time on giving in writing 72 hours' notice (the parent or guardian giving this notice in the case of a minor). Asked by the Chairman whether it was not sometimes difficult to draw the line in a voluntary patient between a mental and a physical case, the witness agreed, but said that the medical attendant would be able to say, and he could suggest a particular nursing home to the patient.

Sir David Drummond said that the need for notification of mental illness would militate largely against patients seeking early treatment. The witness replied that there would be no public intimation of what had occurred. As to the nursing homes, he thought the duty of saying what were physical and what were mental cases should be imposed on the medical man sending the cases. The essence of the Board's recommendations was that for these voluntary cases there should be no detention. Sir David Drummond asked if it was the view of the Board that all cases of neurasthenia should be notified.

Dr. Bond said he would rather not answer the question in that form. He would prefer to say that where the medical man considered a patient to have mental symptoms, or he thought the case a mental one, he should use these provisions, mainly with the object of protecting himself against the event of the case turning out differently. It was fear of the provisions of the present Lunacy Act which prevented and detracted from early treatment of mental conditions. This fear could be wiped away by the simple provisions now suggested. But how one was to lay down exactly to which cases this could be applied passed the wit of man. It was a question of diagnosis and medical opinion, and he would be sorry to see any attempt made to schedule exact symptoms, or to try strictly to demarcate them.

Sir David Drummond asked, in that case, how could the general practitioner be expected to do it?

Lord Russell said it was a question of degree. In the early stages of mental disorder it was difficult to know which cases required notification, but it was a long step from that doubtful stage to the stage in which it was necessary to institute legal proceedings.

The Chairman asked the witness, concerning clause (*c*) dealing with the right of the Board to inspect the place where the patient was being treated, whether, in the event of the Board being dissatisfied with the place, there should be power on the part of the Board to order the removal of the patient from it. Sir Frederick Willis replied in the affirmative. Asked whether it was proposed that the patient should be seen, he said this was not set down, but they would wish to be satisfied on the matter. The Board were anxious not to do anything which would interfere with this class of patient. The Chairman said it seemed difficult to know at what stage a voluntary patient would cease to be such, as the volition varied from day to day. Sir Frederick Willis agreed that there was no sharp dividing line.

Mr. Macleod instanced the case of a man admitted for voluntary treatment who, when asked at a later stage why he was there, replied that he did not need treatment, but was there because he was being persecuted. Such a case, at that stage, must either be discharged or certified.

Dr. Bond said there certainly were oscillatory cases in which the periods of insanity were evanescent, and one of the worst outrages which could be perpetrated on such a patient would be ordinary certification.

Passive Cases.

Dealing next with the non-volitional, passive case, the Chairman asked where the witness considered such should be received.

Sir Frederick Willis said this type of case might be received for treatment in any mental hospital or registered hospital, and if the institution or place had previously been approved by the Board for the reception of such cases, in any licensed house, general hospital, nursing home, or into private care, but subject to the following conditions: (*a*) that an application is made by a relative or friend, or by a public official for the reception of the case, accompanied by two medical recommendations; (*b*) that admission of the case is immediately notified to the Board, and copies of the two medical recommendations furnished to them; (*c*) that a medical report on the case is sent to the Board within seven days of admission; (*d*) that the institution is open to the inspection of the Board; (*e*) that the Board has the right to order the discharge of a patient from the "passive" class should they consider him unsuitable to remain on that footing; (*f*) that the person on whose application the patient was received for treatment should at any time have the right to remove the case on giving 24 hours' notice; (*g*) that if the patient recovers volition he should be allowed to leave on giving 72 hours' notice to the person in whose charge he is; (*h*) that if at any time the non-volitional but passive case becomes a resistant case, he must, within a month thereof, be dealt with under the provisions relating to the resistant type of case, or be discharged. He explained that the 72 hours' notice requirement was to allow time to communicate with the relatives of the patient in the event of his having developed dangerous tendencies, so that they would be enabled to take the further steps needed. He said the Board considered that the non-volitional but passive patient should only be received on the footing here stated for a period of six months in the first instance, but that there should be power to give a further six months if two independent medical practitioners recommended that, in the patient's interests, this was desirable, and if copies of the two medical reports were furnished to the Board. If after this year of treatment it was considered that the patient ought to be detained for further care and treatment, this should only be done after he had been fully certified. If the patient should recover volition and was willing to remain as a voluntary patient, he should be allowed to do so, subject to the conditions relating to voluntary patients.

The Resistant Case.

Sir Frederick Willis said the Board considered that the resistant case should only be detained after full certification, on a petition signed by a relative, friend, or public official, and an order signed by a judicial authority, subject to the following limitations: (*a*) that a case may be received on a provisional order signed by a relative, friend, or public official, and accompanied by one medical certificate. Under this, a patient may be detained for 14 days if, in the opinion of the medical officer of the institution or place, or—in the case of a patient under single care—the medical attendant, the case needs detention for that period. A copy of the provisional order and certificate should be sent to the Board on admission. If at the expiration of the 14 days the medical officer or medical attendant should be of opinion that the patient should be detained a further 14 days for observation and treatment, this may be done provided the doctor certifies, in writing, that the further detention is desirable. A copy of this certificate should be furnished to the Board. They recommend that detention of the resistant case beyond the 28 days should only be allowed under an order of a judicial authority on petition. These cases, say the Board, should only be received where suitable accommodation and expert medical treatment and nursing are available. They might go to any public mental hospital, registered hospital, or licensed house, and, if the institution or place had been previously approved by the Board for the reception of cases under a provisional order or certificate, to any general hospital, nursing home, or Poor-law institution, or under single care. They proceeded to say that cases fully certified should be received only in public mental hospitals, registered hospitals, or licensed houses, or in single care. And they might also be received in Poor-law institutions or in nursing homes which had previously been approved by the Board of Control. Sir Frederick Willis said the Board considered that the public responsibility for providing for all mental cases should rest with the visiting committee of the local authority, not with the guardians of the poor, and that if any Poor-law accommodation was used, it should be used in pursuance of a contract between the visiting committee and the guardians.

Evidence of the Ministry of Health.

The evidence at the short sitting on Dec. 11th was given by Mr. H. W. S. Francis, O.B.E. (Assistant Secretary of the Ministry of Health), whose work related especially to the Poor-law.

The Chairman explained that under the existing code of lunacy in this country there was an intimate relationship between that code and the Poor-law; and the Royal Commission had been considering the general question of that relationship and possible modifications of it. He asked the assistance of the witness as to any observations the Minister wished to make as to extricating, as far as possible, lunacy administration from Poor-law administration—i.e., whether the element of pauperisation associated with lunacy could be modified or altered. For instance, on the question of accommodation, a considerable number of patients were at present accommodated in Poor-law institutions, both certified and uncertified patients, and he understood these were directly under the charge of the guardians. The witness said this was so, and that some had become pauperised by the fact that a mental malady had overtaken them. The existing machinery provided for the use of Poor-law institutions as receiving houses for lunatics. He did not think there were many lunatics under Section 26 of the Act of 1890.

The Chairman asked where the population in the Poor-law institutions came from, and the witness replied that there were three elements: (1) those who came into the workhouses as receiving houses, perhaps on their way to an asylum, but who might be discharged without going to an asylum; (2) those who were already paupers and who became insane; (3) those who were discharged from the asylum and went back to the workhouse, where they were retained under the old provisions of the Act. Section 26 kept the lunatics in closer touch with county administration. If it were thought desirable to extricate the lunacy administration from its present association with the Poor-law, it might still be necessary to use Poor-law premises for mental patients, and by applying Section 26 the administration could be placed in the hands of the local authority. But in order that the Poor-law premises so used could become ad hoc branches of the lunacy system the Section seemed to need some development. There would have to be a transfer from Poor-law accommodation to asylum authority accommodation. No part of the expense due to this new course would fall ultimately on the guardians, though in the first case theirs would be the expenditure. In reply to a further question Mr. Francis said he did not see why there should be any substantial difficulty in regard to people already receiving Poor-law relief who then were visited by mental illness, as distinct from those who would be sent direct by asylum authorities. The evidence favoured the lunacy authority being responsible for all cases arising in its area, irrespective of the Poor-law. The medical officer of health and his staff offered a practical alternative to the present system, an alternative which was desirable.

The members proceeded to discuss the question of the forfeiture by a lunatic in a rate-aided institution of the old-age pension. Asked by Miss Symonds whether he considered the conditions and facilities now provided by the guardians were satisfactory, Mr. Francis said he thought that, generally, they reached a fair standard.

The Commission adjourned, no announcement as to future meetings being made.

PENSIONS FOR HOSPITAL OFFICERS AND NURSES.

A memorandum* setting out a draft scheme of pensions for hospital officers and nurses has been prepared by a conference composed of representatives of King Edward's Hospital Fund for London, the British Hospitals Association, the Incorporated Association of Hospital Officers, and the College of Nursing, Limited. Lord Stuart of Wortley, chairman of the Management Committee of King Edward's Hospital Fund, was the chairman of the conference, which included representatives from the provinces as well as from London.

Draft Scheme.

The draft scheme follows, generally speaking, the lines recommended in the report of a committee of the King's Fund, of which Mr. W. J. H. Whittall, F.I.A., was chairman. This committee reported that the provision of pensions for the staffs of voluntary hospitals, including nurses, was inadequate ; that this led to the age of retirement being unduly postponed ; and that the loss of all pension rights on migrating from one hospital to another was contrary to the interests both of the officers and of the hospitals. After commenting on the risks that would inevitably attach to any form of mutual pension fund, the committee recommended a scheme on the lines of the Federated Superannuation System for Universities, where policies are taken out with selected insurance companies. The present draft scheme is on the same basis, adapted to the circumstances of hospital and nursing service. The hospitals adopting the scheme would contribute 10 per cent. of salary and emoluments and the officers and nurses 5 per cent. The normal pension age would be 60 for officers and 55 for nurses. There would be a choice between three main types of policy : endowment assurance, giving a fixed rate of annuity at the retiring age or a certain sum at previous death ; deferred annuities with return of premiums on premature withdrawal or death ; and deferred annuities without return of premiums. The scheme, if adopted, would include the salaried staff, administrative, clerical, and dispensing, and also the whole nursing staff except probationers during their first year. Members migrating from one hospital to another, or from one branch of nursing service to another, would take their policies with them.

To nurses this freedom to migrate without loss of pension rights is specially important, since most of them begin their career in hospitals and then move into other branches of the profession. The scheme would cover the nurse's whole working life, and it would remove a hardship that now deters many suitable women from taking up nursing—namely, the impossibility of making adequate provision for old age. The promoters of the scheme urge the advantages of beginning at an early stage of training, provided that the hospital's contributions do not become the property of the nurse unless she remains in the profession at least five years. Special arrangements are suggested for enabling the policies to be maintained by nurses engaged in private nursing, though the details of this part of the scheme do not concern hospitals. The scheme would be administered by a central council representing the hospitals and the members ; and this council, through a special nurses committee, would deal with matters relating to nurses not in hospital service. The memorandum discusses the arguments for and against each of the above provisions, and is issued for the consideration of each individual hospital. The conference itself did not express any opinion other than general sympathy with the principle of a pension scheme, merely adding that, if the draft scheme proved acceptable to the hospitals, the advantages anticipated from it, both to the hospitals and to the officers and nurses, would be the more fully realised the larger the number of hospitals that joined.

VIENNA.

(From our own Correspondent.)

Late Reaction after Application of Radium.

At one of the recent meetings of the Vienna Medical Society Prof. Marschik demonstrated a man of 49, who had been treated by radium 18 months ago for ulceration of the soft palate. Histological examination of an excised portion had proved the presence of cancer, so radium was applied in 13 sittings, with a tube containing 50 mg. radium bromide. Each sitting lasted 30–50 minutes, the other parts of the mouth being apparently well protected. The ulceration slowly disappeared in January, 1925, but three months later it reappeared. Vigorous radium treatment was again instituted, but it was useless ; so the patient consented to an operation, performed in July, 1925, which resulted in a cure of the carcinomatous ulceration. But two months later the patient again came, because on the base of the tongue, just opposite to the place of the original ulcus, a slowly growing necrosis had been observed. This ulceration gradually sloughed away, and the mouth is now normal. Prof. Marschik noted that the larynx is specially liable to this late reaction. In his experience the susceptibility of the neoplastic cells to radium varies with their degree of differentiation—the less differentiated the more vulnerable—thus lymphosarcoma is easily affected, whilst epithelial carcinoma or other tumours with highly differentiated cells are much more resistant. He deprecated the use of the method of massive doses, which, in his opinion, should be abandoned. Diathermy was an excellent method for the treatment of late reactions to radium. In the ensuing discussion, Dr. Hofer said that he had seen a similar case of late necrosis in the ethmoid bone six years after the application of massive doses of radium. He said that Kumer and Freund were now very careful in the application of radium to the mouth ; Dr. Kumer applied a dental toothplate with a prolongation, in which the radium applicator is hidden, so that the surrounding parts are completely protected.

Sugar as a Preservative of Anatomical Specimens.

At the same meeting of the Vienna Medical Society Prof. Tandler showed a number of anatomical specimens in which the original colours and form were beautifully preserved. These specimens were 8–12 years old, but had not suffered any deterioration. The method is simple. It consists only in the immersion of the preparation or specimen in a concentrated solution of cane- (or beet-) sugar. The vessel is then closed hermetically. The superficial layers of the tissues become quite translucent. The specimens can be exposed to the heat of an epidiascope without suffering damage. Sections through the brain, the kidney, the intestinal canal and the sexual organs were demonstrated. It may be added that the ancients in Western Asia, in Syria, and Mesopotamia used honey for embalming purposes. One of the old historians relates of a king who carried the dead body of his favourite wife with his chariot in all his wars, the body being preserved by means of honey.

Prize for Essay on Cancer.

The Austrian Society for investigating and fighting cancer has again resolved to offer for the year 1925 a prize of about £50 to the author of a paper which is held to promote our knowledge of the cancer problem in a fundamental way. Competition is restricted to Austrian investigators, and the prize will be awarded only if the paper is actually an advance on the present state of knowledge. Alternatively, the sum will be used in any way as seems desirable to the chairman of the society. All scholars and scientists of Austria are invited to compete, whether they be medical men or not; the paper must have been published between Jan. 1st, 1925, and Jan. 31st, 1926. The judges consist of the committee of the society.

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* Draft Scheme of Pensions for Hospital Officers and Nurses, published for the King's Fund by G. Barber, 23, Furnival-street, Holborn, E.C., price 1s. net, post free. Copies of a brief summary of the memorandum may be obtained free.

Clinical and Experimental Studies on Serous Cavities.

Dr. Schönbauer, of the Eiselsberg Clinic, recently read before the Gesellschaft der Aerzte in Vienna a paper in which he dealt chiefly with the serous membranes of the different body cavities. He has found that a diseased or injured serous membrane has a much diminished power of absorption, which is lessened still further by the injection of concentrated solutions into the cavity. This lessened absorption does not last long. The observation holds good for the peritoneum, the pleural cavity, or the meninges; but hypertonic solutions (10 per cent. NaCl, or sugar, or urotropine) are not long effective, and experiments have shown that, for instance, in diffuse perforation peritonitis, the liquid cannot be injected except during operation. In his search for a strong bactericidal solution he found that pepsin hydrochlorid answers the purpose best. In 103 cases of peritonitis after perforation, treated with this solution, the mortality was 11·7 per cent., which is only about one-third of the previous mortality. The absorption of poison into the system is markedly retarded by injecting pepsin hydrochlorate into the peritoneal cavity. In paralytic ileus after operation or perforation animal experiments have proved that intoxication is prevented by using a strong antitryptic serum; two successful results have followed its use in human cases. A second series of experiments dealt with the pleural cavity. Here, too, Dr. Schönbauer could prove that absorption is lessened by inflammation, and that it can be lowered further by injection of hypertonic solutions. Therefore he advises in acute cases of empyema the use of aspiration of the greater part of the pathological material and the injection of a hypertonic solution before the pyothorax is completely emptied. Similar experiments were conducted on a number of animals with regard to the conditions of the meningeal membranes. Dr. Schönbauer discussed the details of these interesting experiments, which have a bearing upon otologic operations; he showed that in traumatic meningitis lumbar puncture may spread the infection of the meninges, but, on the other hand, by injecting hypertonic solutions of 40 per cent. urotropine into the spinal canal an extension of the infection was effectively checked. The experiments will be controlled shortly on patients in the otologic clinics.

Decrease of Syphilis in Vienna.

Investigations conducted on a large scale in this country have shown, as Prof. Finger recently said in the Austrian Board of Health, that 12–14 per cent. of the entire population were at one time infected with syphilis or gonorrhœa. Since 1922, however, records kept in hospitals and dispensaries show that a rapid decrease of primary syphilitic infection has taken place, at least in Vienna. Systematic instruction and teaching of the public, promoted by the Society for the Prevention of Venereal Diseases, together with excellent facilities for early and intensive treatment of all infected persons, is considered to have brought about this change, coupled with modern methods of diagnosis and prophylaxis and treatment. The early recognition of a primary sore enables the timely and adequate treatment of the patient and thus stops many potent sources of spreading infection. In the country, however, this rapid decrease is not so clearly manifest although it is also evident. It happens now that in several provincial hospitals the number of fresh cases of syphilis exceeds in one month those seen in the Vienna clinic at the same time. Especially the younger people are now oftener affected than formerly, most likely due to the radical change of economics and morals which has taken place in the last ten years. But with the comparative disappearance of primary sores the secondary lesions become more rare—as shown by the reports from competent factors—and we are entitled to the hope that in due time the dreaded disease may be really wiped out. The public is now impressed with the statement that syphilis *can* be cured if treatment is commenced early enough. The more this is hammered into the minds of the population the earlier a radical improvement of public health is to be expected.

PARIS.

(FROM OUR OWN CORRESPONDENT.)

Increasing University Fees.

FROM the first day of 1926 fees at the University of Paris will be raised by 50 per cent., the regular trimonthly levy of 40frs. for the undergraduate courses becoming 60frs., and other fees being affected in similar proportion. French students belonging to families including three or more children are entitled to free instruction and generous remission of the ordinary charges. This provision is extended to families which have lost children in recent military or civil service.

Annual Meeting of the Academy of Medicine.

At the annual public meeting of the Académie de Médecine on Dec. 8th the commemorative eulogy was delivered by Prof. Achard on Jacques Raphael Lépine, of Lyons, who died in 1919. Lépine, who looked at medicine from the physiologist's viewpoint, was a pupil and friend of Cruveilhier, Claude Bernard, Vulpian, Charcot, Virchow, Cohnheim, and Pasteur. Among his contributions to medicine were the discovery of centres governing the heart-beat, vasomotor reactions, blood pressure, and movements of muscles in the hand and face; he made a special study of the perivascular channels of the brain, and the causation of pseudo-bulbar paralysis, and the action of caffeine, digitalin, strophanthin, atropine, and sodium benzoate. Lépine helped to establish the unitary character of tuberculous lesions, and his labours on diabetes are familiar. A number of prizes were awarded at this meeting. The Prince of Monaco prize of 100,000frs. went to Laguesse and Hédon for their discovery of the internal secretion of the pancreas. Debré received 4800frs. for his work on convalescent serums, especially in measles. Levaditi was awarded 12,000frs., Maygrier 6000, Marquézy 3000, and Guillaume 3000frs.

Clandestine Sale of Narcotics.

Traffic in cocaine, heroin, and other narcotics continues to be very considerable at Paris. Montmartre is the largest centre. From houses and "merchants" in this part of Paris representatives are distributed rather widely over the city. Four dealers have just been arrested on the charge of homicide by imprudence, death of a young Russian student through heroin poisoning having led to investigation and discovery. Charges are also being filed against several of the clients. The only penalty against the narcotic traffic at present is the occasional infliction of imprisonment for a period not materially embarrassing to the offender.

Milk and Child Welfare.

Since Dec. 1st the Paris milk-supply has become very irregular and insufficient. A number of proposals have been presented to the municipal council, advocating limitation of the sales of milk in cafés and restaurants, use of milk cards for children and the sick and aged, and distribution of milk among the different arrondissements on a population basis. These projects will be considered at once. The Pierre Budin Foundation, of which Prof. Comby is president, provides regular free instruction in prenatal and infant care for students, physicians, nurses, young mothers, and all who may be interested in the subject. It also supplies from its station in the rue Falguière annually some 15,000 litres of milk, sterilised by the Soxhlet-Budin method.

On the motion of the Ministries of Finance, Labour, and the Interior, a census of the French population has been fixed for March 7th, 1926.

A regional anti-cancer centre has just been installed and opened at Rheims. The centre will promote active educational propaganda on the prevention and treatment of cancer.

The new legislation defining the rights of occupants and proprietors of houses cannot come into force until April 1st, 1926. After that date occupants must meet the advanced rents or vacate.

Prof. Widal's clinic at the Hôpital Cochin opened on Dec. 15th. Clinical lectures are given daily at 9 A.M.; lectures in the amphitheatre every Tuesday at 11 A.M.

At the Sorbonne, Dr. Sicard de Plauzolles is giving free public instruction on syphilis, gonorrhœa, tuberculosis, and other social diseases; on Tuesdays in the Milne-Edwards amphitheatre, and on Saturdays in the amphitheatre Edgar Quinet. The time is 5.30 P.M. These conferences are under the auspices of the National Office of Social Hygiene.

UNITED STATES OF AMERICA.

(FROM AN OCCASIONAL CORRESPONDENT.)

The Doctor and the Changing Order.

THE President of the Rockefeller Foundation, Dr. George E. Vincent, spoke on the above theme recently to the New York Academy of Medicine. A chiefly urban, minutely specialised, and highly interdependent industrial, commercial, and social system confronts the modern doctor, he said, with new problems. His former individualistic neighbours, the merchant, banker, manufacturer, even lawyer and teacher, have been drawn into organisations and have largely lost their independence as self-sufficing units. Must the doctor, who can now master only a part of the vast total of medical knowledge and skill, follow in their footsteps? It is recognised that effective medical care demands insistently an individual relationship between doctor and patient. There is thus created a conflict between the social need for team-work on the one hand and the demand for human insight and sympathy on the other. In seeking a solution Dr. Vincent reviewed the voluntary health insurance schemes of Denmark and Norway and the compulsory insurance in Germany and Great Britain, concluding that "the medical care is probably on the whole inadequate and certainly unorganised." Only in university clinics, in well-developed hospitals, dispensaries, and pay clinics, in true group practice, and in health centres is there to be found genuinely organised medicine. But these organisations, too, are subject to criticism. Are they not mechanising medicine, eliminating the personal relation? Perhaps, replies Dr. Vincent, but it is clear in any case that the old order is changing. It looks as if society means to insist upon a more efficient organisation of medical service for all groups of people, upon distribution of the costs of sickness over large numbers of families and individuals, and upon making prevention of disease a controlling purpose.

Alcoholism in 1925.

The very impartial report on prohibition recently issued by the Federal Council of Churches was in itself so inconclusive as to the final outcome of the present legislation that the Council has found it necessary to issue a special announcement of its unchanged advocacy of prohibition and law enforcement. The figures on alcoholism for the first nine months of the present year issued by the Metropolitan Life Insurance Company show that the death-rate from alcoholism is 2·8 per 100,000, compared with 3·2 per 100,000 for the corresponding period of 1924. The deaths from cirrhosis of the liver have, however, increased from 673 to 823, a rate of 6·3 for the first nine months of last year and 6·6 for the same period in 1925. Poisonings by wood or denatured alcohol have also increased. Since the beginning of 1922 alcoholism (excluding cases of poisoning from wood or denatured alcohol) has accounted for the deaths of 1528 industrial policy-holders in this company. Other items from this report show that the death-rate from typhoid fever continues to decline among the white population but has actually increased among the coloured population, standing at the appallingly high rate of 11·4 per 100,000 in the latter case. There is a continued decline of tuberculosis deaths in both white and coloured. The deaths from automobile accidents continue to increase.

Periodic Physical Examination.

The conference of secretaries of State medical societies to study and promote a scheme of periodic medical examinations was a lively occasion. At the present time while the American Medical Association, the National Health Council, and the Gorgas Memorial are all promoting such examinations, the work is largely done by business organisations for gain. One such corporation speaks of employing upward of 8000 medical examiners, others are no more than the one-room commercial laboratory. The conference deprecated the need for any middleman between physician and patient, and set its face strictly against the commercialisation of medical practice.

Public Health Services.

REPORTS OF MEDICAL OFFICERS OF HEALTH.

THE following are some of the health statistics for 1924 of a group, comprising three counties, three county boroughs, and three cities:—

Name of district.	Estimated mid-year population (R.-G.).	Birth-rate.	Death-rates per 1000 of the population.				Death-rates per 1000 births.		
			All causes.	Tuberculosis.	Cancer.	Resp. diseases with influenza.	Neonatal mortality.	Infant mortality.	Maternal mort. from childbirth.
Kent	1,107,800	16·6	11·1	0·95	1·38	1·9	26	53	3·3
Staffordshire .	718,400	21·6	11·4	0·90	0·89	2·8	36	79	2·7
Huntingdonshire	55,700	17·2	12·5	0·82	1·54	2·0	37	60	4·2
Birkenhead C.B.	154,100	21·1	11·9	1·21	1·16	2·9	36	92	2·8
South Shields C.B.	126,600	24·3	14·5	1·62	0·98	3·8	42	102	5·2
Bournemouth C.B. ..	84,450	13·2	13·8	1·10	1·80	2·3	26	45	0·9
Norwich C. ..	123,900	17·5	11·6	1·22	1·51	2·0	26	62	1·9
Carlisle C. ..	54,910	20·3	13·8	1·25	1·31	2·5	30	95	2·7
Gloucester C. .	53,090	19·6	12·6	1·32	1·26	2·3	34	83	3·8

C.B. = County borough. C. = City.

Kent.

Dr. Alfred Greenwood reports that the death-rate from cancer remained at the same high level as in the preceding year. Some very high rates were recorded in the various districts; thus, Deal borough had a rate of 2·13 for 1924, New Romney a rate of 2·03, and among the rural districts Elham had a rate of 2·11 and Tenterden a rate of 2·20. Dr. Greenwood assisted the publicity work by giving popular lectures on this subject to the lay public in various centres of population in the county. These lectures, illustrated by lantern slides and framed in simple language, proved to be a great attraction. The arrangements were made by the local medical officers of health in each case. Very large audiences were addressed and the modest cost was borne by the local council.

Successful administration of the county tuberculosis scheme continues, but, says Dr. Greenwood, " still further benefits may accrue when it is possible to ally with our work in this direction greater expedition in the provision of houses, with consequent improvement in home conditions and less overcrowding. Further accommodation for patients suffering from pulmonary tuberculosis in its early stages is now being arranged at the county sanatorium at Lenham, owing to the training section at that institution being discontinued by the Ministry of Health. Forty additional beds will become available shortly. An outbreak of paratyphoid fever in the borough of Dover was traced, after a considerable amount of difficulty owing to the complicated methods of milk distribution, to a " carrier " working on a farm outside the borough. The sanitary defects found on the farm contributed to the spread of infection. The " carrier " was isolated in hospital for two months and left at his own request, giving an undertaking that he would not in future follow an occupation which involved the handling of any foodstuffs used by the public. The work of the county bacteriological and pathological laboratories at Maidstone continues to elicit the cordial appreciation of the medical profession throughout Kent, and the number of examinations again shows an increase.

Continued efforts are being made to provide an efficient midwifery service throughout the county either by making grants to assist in the formation of district nursing associations, or by placing subsidised midwives in districts where a livelihood cannot be obtained from midwifery alone. Some 18 districts are now served by subsidised midwives. A very successful post-certificate course for midwives, comprising lectures and demonstrations, was held at Gillingham from Oct. 6th to 10th, and was attended by 125 practising midwives and 24 health visitors.

Staffordshire.

Dr. W. D. Carruthers reports that there are now only 47 untrained midwives and 225 trained midwives as compared with 438 untrained midwives and 18 trained at the time of the passing of the Midwives Act. The provision of an efficient service has been one of the chief concerns of the public health committee for a considerable period. In the more populous districts, if the midwifery service is inadequate, either a midwife is trained at the expense of the county council on the condition that she practises in a selected area for three years, or a trained midwife is established with a guaranteed income of £120 a year on condition that she does not select her cases. The latter method is the one usually adopted, and experience has shown that such midwives do not require a subsidy for as long as three years. There are 62 local nursing associations affiliated to the County Nursing Association, and eight non-affiliated which undertake midwifery. The smaller nursing associations in the county employ nurse-midwives, who are generally called village nurses. In addition to holding the certificate of the C.M.B., these village nurses have received a six months' training in general sick nursing at the Tipton Training Home. At the October meeting of the health committee a special scheme of post-certificate training was adopted for the practising midwives under which 70 practising midwives annually will attend a refresher course of a fortnight's duration at the Tipton Training Home. Arrangements will also be made to give the pupil midwives one month's practical training in health visiting. Antenatal work is also to be developed at all centres as far as possible.

An examination of the returns of the district medical officers of health has shown that in 9 out of 48 sanitary districts there were more deaths from pulmonary tuberculosis than notifications. Work with regard to the prevention of rivers' pollution makes progress and many of the districts in the county have bio-aeration schemes in hand.

Huntingdonshire.

Dr. C. B. Moss-Blundell says a great deal more should be done to improve the condition of the children. The education committee have provided for the treatment of eye defects, but tonsils and adenoids are neglected. Dental treatment is a crying need. Verminous heads are quite unpardonable, and Dr. Moss-Blundell thinks it would be a " Heaven-sent blessing if fashion dictated the Eton-crop for all time for all school-children." For venereal diseases an additional centre is needed in the north of the county, as also for tuberculosis ; and a new clinic for school-children should be established at Fletton. The problem of mental deficiency becomes more acute as there is no suitable institution available. Dr. Moss-Blundell is sorry that the Fowlmore aerodrome was not acquired for this purpose, and suggests that Huntingdon should combine with one or more other counties to acquire a suitable place.

Birkenhead.

Dr. D. Morley Mathieson reports that the regular bacteriological examinations made at the Alwen water-supply showed that the water was of remarkable purity and remained so throughout the year. The revision of the tuberculosis register shows that at the end of 1924 it included 1600 cases of tuberculosis of all types. This is rather more than five times the notifications for 1924, which number 294. Only 62·5 of the cases were notified to the department three months or more before death, but this is a slight improvement on the three preceding years. Owing to the fact that more beds are now available for adults at the Cheshire Joint Sanatorium at Burntwood, it is possible to admit more children suffering from surgical tuberculosis to the Thingwall Sanatorium. These children do very well at Thingwall, and the light treatment has been adopted with much success. Twelve beds are also reserved at Leasowe Hospital for surgical tuberculosis.

A scheme has been approved by the education committee for dealing with crippled children, comprising an orthopædic clinic, hospital accommodation for non-tuberculous cases, the provision of splints, &c., and the services of an orthopædic surgeon, an orthopædic nurse, and a masseuse. The clinic will be held on Saturday mornings at the central premises occupied by the Birkenhead and Wirral Invalid Children's Association, which association is already subsidised by the corporation and employs a masseuse. Hospital accommodation will be provided at Leasowe on the " patient-day " basis and £150 is included in the estimates for the first year. Mr. Hartley Martin, the senior surgeon of Leasowe Hospital, is recommended as the orthopædic surgeon, and for the first year it is estimated that one attendance by him per month at the clinic will be sufficient. On the intermediate days the orthopædic nurse will be in attendance. The added cost of the scheme for the first year is estimated at £270, half of which will be received back in the form of a grant to the education committee. Dr. Mathieson draws attention to the limited scale of the dental inspection and treatment provided for the school-children. Only one group is dealt with —namely, children born in the years 1914, 1915, and 1916. The result to these is excellent, but the other children in the elementary school remain outside the scope.

South Shields.

Dr. W. Nicoll states that the devastating effects of the influenza epidemic, which prevailed in the earlier part of the year, were severely felt on Tyneside. Excluding the memorable epidemic of 1918–19, South Shields was more severely affected during 1924 than in any year of the last 30. Nearly a third of all the notified cases of primary pneumonia died, and about half of the cases of influenzal pneumonia. The influenza epidemic was followed by cases of encephalitis lethargica ; nine cases were notified, eight of which died.

As a sequel to the visit of a Medical Inspector of the Board of Education, the question of the school dental service was raised anew and a full-time dentist appointed in place of two part-time dentists. A second full-time dentist will be needed quite soon. Another need of South Shields is increased and improved hospital accommodation for infectious cases. As a makeshift, huts have been erected in the grounds of the hospital. There is no observation block for dealing with doubtful cases and there are no segregation cubicles at the hospital. The death-rate from tuberculosis, which has been very high for some time, showed a drop during 1924. Among the 205 deaths from tuberculosis there were ten of Arab seamen, and Dr. Nicoll points out that they suffer more than the rest of the population. Arabs only constitute about 0·4 per cent. of the total inhabitants. A letter has been addressed to all the midwives, pointing out that when medical aid is required they should send for the medical practitioner desired by the patient. An antenatal clinic, under the charge of Dr. Susan Jamieson, was opened in June.

Bournemouth.

Dr. A. D. Edwards points out that the infant mortality was the lowest ever recorded in Bournemouth, and expresses his appreciation of the excellent work done by the Bournemouth Voluntary Association in all the centres. A fifth centre had to be opened towards the end of the year. The public analyst, Mr. R. A. Cripps, discusses the question of shredded suet. The rice flour in the samples submitted varied from 0 to 23 per cent. The object of the addition is to prevent the granules of fat becoming massed together. For this purpose from 10 to 15 per cent. (according to the hardness of the suet) of rice flour is ample. Consequently, all samples containing more than 15 per cent. must be regarded as adulterated. As the result of the action taken during 1922 and 1923 the use of preservatives is decreasing. Eleven out of 29 sausages contained boron, but only in one case in excess of 0·25 per cent. Five samples of fish paste and 22 of sponge cake were all free from boron. Ten samples of margarine contained boric acid in excess of 0·2 per cent., while 10 out of 11 samples of butter were also boricised but in only three in excess of 0·2 per cent. Nine samples of lemon squash, lime-juice, &c., all contained either sulphurous or salicylic acid. Mr. Cripps expresses his surprise that boric acid, "which has been used for many years under official sanction in preserved cream, butter, &c., and salicylic acid, which has been similarly favoured in various beverages, are now to be forbidden." He is doubtful as to whether the substitution of sulphites for boric acid will be advantageous, especially as the consumer will be liable to take a medicinal dose with less than ½ lb. of sausages.

Norwich.

Dr. H. Cooper Pattin reports that provision has now been made for the dental treatment of nursing and expectant mothers and is already proving beneficial. There is need for increased ward accommodation at the maternity home. The development of the Stanninghall colony progresses slowly. The Ministry does not quite approve of this being used for all types of tuberculosis, but appears to have a preference for a combined eastern counties hospital for surgical tuberculosis. The school dental officers find defects in 65 per cent. of all the children examined. With the appointment of a second dental officer more children now receive treatment, and it is hoped that arrears will ultimately be overtaken. New houses do not meet the needs of the natural increase of the population. The housing scarcity, therefore, becomes aggravated, and the difficulty is rendered greater by the worn-out condition of much of the house property in the city.

Carlisle.

Dr. Joseph Beard reports six notifications of encephalitis lethargica. One was a non-resident who died in the infirmary. Of the remainder three made complete recoveries, one recovered except for a slight dilatation of the pupil, and the fifth made an apparent recovery, which was followed a month later by difficulty in swallowing and other grave symptoms leading to a fatal end. Dr. A. C. B. McMurtrie reports that syphilis is declining and looks forward with confidence to the time when syphilis in Cumberland will be almost a thing of the past. Gonorrhœa, on the other hand, he thinks is increasing. His opinion is illustrated by charts showing the number of new cases treated at the Cumberland Infirmary since 1920.

Gloucester.

Dr. Ronald B. Berry draws attention to the inadequate and extremely inconvenient accommodation provided for the health and school medical departments. During the year there was an outbreak of enteric fever of a mild type among children. Investigations showed that the children had probably become infected by drinking from a brook contaminated by sewage from the second county asylum. The outbreak led to an examination of the city water-supply, some of which was found to be unsatisfactory. The undesirable water came from the Robinswood Hill supply, and, after a survey of the gathering grounds, it was decided to dispense with the water from this source. The report on the dental scheme for expectant and nursing mothers shows that this work is growing in popularity, and that prejudice is disappearing. Treatment consists mostly in extractions, but occasionally the "Ivory Cross," a philanthropic association subscribed to by dentists, helps to provide artificial dentures. The present state of the housing problem makes all branches of the work of the health department exceedingly difficult. Dr. Berry thinks much more could be done in the way of open-air classes at the elementary schools. The school dental officer, Mr. L. Machin, reports that the dental scheme has received a very decided check from the system of charges instituted towards the end of the year. The majority of parents refuse treatment rather than pay.

SCHOOL MEDICAL SERVICE.

THE following table summarises the statistics for Manchester, Birmingham, and Northampton :—

Name of district.	No. on roll.	Average elem. school attendance.	No. of routine children examined.	No. of special examinations and re-inspections.	Percentage of children found on routine examination requiring treatment.†
Manchester . .	—*	—*	29,920	140,344	27·71
Birmingham .	140,738	124,019	42,736	67,354	26·99
Northampton	26,723	—*	6,479	2,183	24·8

* Not given. † Excluding dental defects and uncleanliness.

Manchester.

In addition to the routine work, Dr. A. Brown Ritchie and his staff examined between 6000 and 7000 children prior to their visit to Wembley exhibition —no light task when it is seen that the routine work has been fully and efficiently carried out. The increasing interest and knowledge of the medical work amongst the teachers are shown by the early recognition and notification of many cases of infectious diseases, but cases of defective vision and hearing still escape the teacher's notice. Extensive treatment is carried out by the staff at the various treatment centres—even minor orthopædic cases being treated.

Many special classes, residential, and day schools exist for the abnormal children, but Dr. Brown Ritchie states there is still a shortage of accommodation for blind, deaf, and mentally defective children. Dr. H. Herd reports on the after-results of encephalitis lethargica in 57 children in whom he found 20 cases of Parkinsonian syndrome (14 serious). Dr. J. G.

Woolham carries on from last year his investigation into the fitness of school-boys. He finds that, apart from the psychological development of the boy, his fitness depends on the anatomical proportionality between the parts or "static" state and on the physiological adjustability or "dynamic" capacity. While the "static" state can be measured, actual working experiments must be made to estimate the "dynamic" capacity which, he suggests, depends on the fitness of the vegetative systems and neuromuscular systems. Using his tests, he found that the distribution of 81 boys into seven grades closely corresponded with the numbers which would fall in each division drawn under a normal probability curve. Under similar tests, a "random sample" of boys in poor health were graded and showed close positive association with that found on purely clinical examination. Fully detailed tables are given in this praiseworthy and painstaking piece of research. Dr. G. W. Matthews has found that boys in abnormal standard for their ages have abnormal blood pressure.

Birmingham.

Dr. G. A. Auden's report makes interesting reading. Much work has been undertaken and the conclusions drawn are sound. Drs. B. and J. Alexander report on the remarkable preponderance of short-sightedness amongst Hebrews in comparison with children in non-Jewish schools—30 per cent. of the Jewish children were myopic whereas the non-Jewish children culled from a similar environ showed only 12½ per cent. of defective vision and these were hypermetropic. Commenting on the orthopædic and remedial exercise clinic, Dr. Auden says: "It has been stated on unimpeachable authority that from 80 to 85 per cent. of the crippling now extant can be prevented or cured by appropriate and skilled treatment." The marked reduction in the incidence of ringworn has continued and the X ray treatment has caused a great diminution in the loss of school attendance. It is estimated that the saving on the 366 cases by X ray treatment is equivalent to 139·4 educational years.

Northampton.

Dr. Charles Paget, M.O.H. and school medical officer, states that, owing to illness of his staff, the number of routine inspections is not complete. He reports favourably on the good nutrition of the children, which is being well maintained.

He has a shrewd paragraph on the subject of squint. We are all familiar with the parent who thinks his child will grow out of it and with his consternation when testing of the squinting eye reveals the fact that its vision is already seriously impaired. As Dr. Paget states, glasses should be adopted early and worn constantly and the disused eye regularly exercised by the use of a shade over the good eye. There are apparently no special schools, though there are 151 mentally defective children and many suitable for physically defective and open-air schools. Such provision is undoubtedly difficult in scattered rural areas, but the absence of facilities is hard on the individual children.

INFECTIOUS DISEASE IN ENGLAND AND WALES DURING THE WEEK ENDED DEC. 5TH, 1925.

Notifications.—The following cases of infectious disease were notified during the week:—Small-pox, 115 (last week 105); scarlet fever, 1963; diphtheria, 1005; enteric fever, 57; pneumonia, 1776 (previous weeks 1531, 1186, and 889); puerperal fever, 51; cerebro-spinal fever, 5; acute poliomyelitis, 4; encephalitis lethargica, 51; dysentery, 6; ophthalmia neonatorum, 109. There were no cases of cholera, plague, or typhus fever notified during the week.

Deaths.—In the aggregate of great towns, including London, there was 1 death from enteric fever (London), 58 from measles, 11 from scarlet fever, 32 from whooping-cough, 59 from diphtheria, and 100 (previous weeks 73, 61, and 44) from influenza. In London itself there were 26 deaths from measles, 24 from diphtheria, and 22 from influenza.

The Services.

ROYAL NAVAL MEDICAL SERVICE.

Surg. Lts. (D.): O. J. Barrable to *Victory*, for R.N. Barracks, Portsmouth, temp. and to *Impregnable;* and L. B. Osborne to *Vivid* for R.N. Barracks, Devonport, temp.

ROYAL ARMY MEDICAL CORPS.

Capt. E. C. Lang to be Maj.

Capt. R. W. D. Hewson to be temp. Capt. and temporarily relinquishes the rank of Capt.

A. L. Moorby to be temp. Lt.

ARMY DENTAL CORPS.

Capt. R. H. Mills retires on account of ill-health, receiving a gratuity.

TERRITORIAL ARMY.

Maj. F. W. B. Young, T.D., to be Lt.-Col. and to command the 164th (West Lancs) Field Ambulance.

Lt. J. H. Iles to be Capt.

Lt. F. R. Sandford (from Supernumerary for service with the Univ. of Lond. Contgt. O.T.C.) to be Lt.

D. C. Vaughan to be Lt.

DEATHS IN THE SERVICES.

Sir HENRY FREDERICK NORBURY, K.C.B., Director-General, R.N. retd., honorary surgeon to the late King Edward and to King George, died at Eltham on Dec. 10th, at the age of 86. An old Bart.'s man, he qualified with the M.R.C.S. and L.S.A. in 1860, in which year he joined the Royal Navy. Ten years later he graduated M.D. at the University of Malta and was appointed staff surgeon in 1872. While serving in the *Active* at the Cape and West African stations he was landed in medical charge of the Naval Brigade during the Kaffir War of 1877–78. He also served in the Transkei as senior medical officer of six different columns of troops, was present in numerous skirmishes, in the action at the Quorra River, and at the battle of Quintana (mentioned in despatches and recommended for promotion). During the Zulu War of 1879 he was in medical charge of the *Active's* Naval Brigade and was P.M.O. of Colonel Bearson's column, being present at the battle of Inyezane. Later he was P.M.O. with General Crealock's column (mentioned in despatches, medal with three clasps, promoted to Fleet Surgeon and was made a C.B.). For three years he served in charge of the Naval Hospital at the Cape and during that period was awarded the Blane Gold Medal on passing for staff surgeon. Subsequently he joined the Naval Hospital at Stonehouse, Portsmouth, and the *Impregnable* training ship for boys at Devonport, where he remained till 1887, when he was appointed Deputy Inspector-General of Hospitals and Fleets, when he was attached to the Royal Naval Hospital at Plymouth previous to being transferred to the Medical Director-General's Department as an assistant to Sir James Dick, the then Director-General. In 1895 he was appointed senior medical officer at Plymouth Hospital with the rank of Inspector-General. In 1897 he was promoted to K.C.B., and in the following year succeeded Sir James Dick as Director-General of the Naval Medical Service, retiring from that position in 1904. Sir Henry Frederick Norbury, who was the author of "The Naval Brigade in South Africa," was made an honorary Fellow of the Royal College of Surgeons of England in 1900. He was also a Knight of Grace of the Order of St. John and was a member of several learned societies. He was awarded a special pension for good service on the active list. Sir Henry Norbury married in 1868 Mina Legge, daughter of Mr. E. G. Wade-Brown, of Burton Bradstock, Dorset, by whom he had three sons and five daughters. One of the sons, Mr. L. E. C. Norbury, is a well-known surgeon, and three of the daughters are married to medical men.

Surg. Rear-Admiral C. M. Beadnell has been appointed honorary physician to the King, vice the late Surg.-Gen. C. Pearson; and Surg. Rear-Admiral A. Maclean honorary surgeon to the King, vice the late Surg.-Gen. H. J. M. Todd.

STAFFORDSHIRE INFIRMARY.—Last week Sir John Bland-Sutton opened a new operating theatre, which has cost £5000, at the Staffordshire General Infirmary, Stafford. The theatre was designed by Sir Aston Webb.

EXTENSION OF RUGBY HOSPITAL.—The Hospital of St. Cross at Rugby, which at present contains 100 beds, has become so inadequate to the needs of the district that a committee which has been considering the position recommends an immediate extension to 115 beds, with a further addition, a little later, which will increase the total capacity to 150 beds.

Correspondence.

"Audi alteram partem."

PROPHYLACTIC INOCULATION AGAINST "COLDS" AND INFLUENZA.

To the Editor of The Lancet.

Sir,—There are some difficulties and even dangers in carrying out Dr. A. I. Simey's suggestions to inoculate schools wholesale. These are touched upon but not emphasised in his article in The Lancet of Nov. 21st: (1) There is the variation in immunity of individuals; (2) there is the method of administering the vaccine; (3) there is the composition and method of preparation of the vaccine.

(1) Variation in immunity is recognised. Some people are frequently "catching" colds or influenza, some rarely have either colds or influenza. Some have a chronic post-nasal catarrh, which in time infects the larynx and bronchial tubes. Some have no apparent catarrh but the organisms lie latent, ready to develop in virulence and number if the individual gets chilled or overtired. When we have recognised this variation in immunity we might express it thus—individuals may have an immunity ranging from 0 to 100; let us divide them into five groups, A has no immunity, B's immunity may be placed at 25, C's at 50, D's at 75, and E's at 100 We can only roughly guess in any individual case whether he should be placed in group A, B, C, D, or E. If, then, you proceed to inoculate him with one of the prophylactic anti-catarrh and anti-influenza vaccines, and if you give it in two doses as suggested by Dr. G. T. Western (The Lancet, Nov. 28th), presumably you give him ½ c.cm. for the first dose. What will happen? If he is in C, D, or E group he will get slight redness at the place of inoculation and possibly slight catarrh next morning and then will be all the better for it; but if he is in A or B group or between B and C he may get a heavy cold with or without a rise of temperature, which lasts on some time and does not produce an immunity; if anything, the immunity is lowered; and, indeed, in some cases bronchitis or pneumonia may follow.

(2) This brings us to the question of the *method* of administering the vaccine. The ideal to aim at is to produce a slight response in the individual by giving a dose which he can easily overcome. Clinically this means that if you are uncertain as to the immunity of the individual you must begin with a dose small enough to do no harm and watch its effect; the individual must not risk getting tired during the 24 hours following a dose, for the process is one of interaction between the dose of vaccine and the patient's powers of response. Therefore it is safest to begin with a dose of 0·1 c.cm. in adults and perhaps 0·05 c.cm. in children under 12. By observing what has happened during the 48 hours following the dose you are in a position to judge what dose to give next; if there has been a slight reaction following the dose you repeat it again at the end of three or four days or when the patient has got over it. Probably after repeating it a second time there will be no reaction and you can proceed to a higher dose. But in some cases where the immunity is very low it requires a great deal of patience before proceeding to higher doses. If, then, you make it your principle never to proceed to a higher dose before the patient has easily tolerated the present one you will be on safe ground. Accepting this method of giving the doses, the following are convenient increases after any dose is tolerated. If you have commenced with 0·05 c.cm. go on next to 0·075 c.cm., 0·1 c.cm., 0·15 c.cm., 0·2 c.cm., 0·3 c.cm., 0·5 c.cm., 0·7 c.cm., and 1·0 c.cm. These increases can always be varied according to the sensitiveness or otherwise of the patient. When the dose of 1·0 c.cm. has been reached, I believe the immunity lasts for at least one year, and if inoculations are repeated again in a year's time, it may be possible to immunise an originally sensitive person by giving three inoculations only.

(3) With regard to the composition and method of preparation of a vaccine, Dr. Simey suggests that specimens of sputum and "cultures" (I presume he means swabs) from the throat and nasopharynx should be sent to a pre-arranged laboratory by a certain date. I do not believe that this is the best way; probably most of the more chronic post-nasal catarrhs are due to either a pneumococcus, micrococcus catarrhalis, or streptococcus, and while there is great value in obtaining an autogenous vaccine for chronic cases, these organisms are of a lower virulence than those where there is pyrexia. A pneumococcus from a pneumonia case makes a far more potent vaccine than a pneumococcus from a chronic catarrh.

If pathologists can provide us with a prophylactic vaccine made from acute cases and made up of two types of pneumococcus as well as *M. catarrhalis*, streptococcus, *B. pfeiffer*, *B. pneumoniæ*, and *B. septus*, I believe that it will be far more effective as a prophylactic than if one is made up from the chronic cases. I do not know how far pathologists subculture in making up their stock vaccines; but it stands to reason that the less subculturing there is the more nearly will the organism correspond in its toxin to the organism growing on the mucous membrane. I presume that pathologists would always use blood in the medium when culturing a streptococcus; and is it possible that organisms grown on nasgar instead of agar make a more potent vaccine? I believe vaccines keep potent more than four months if kept in concentrated form.

I am, Sir, yours faithfully,

Oxford, Dec. 14th, 1925. Henry T. Gillett.

GANGRENOUS APPENDICITIS:

THE INITIAL SYNDROME.

To the Editor of The Lancet.

Sir,—Can one recognise, at the beginning of the illness, a class of appendicitis which calls for early operation to anticipate the certain onset of gangrene and perforation? I think so.

The public is aware and the practitioner knows that there are cases of appendicitis which, coming on suddenly and with acute symptoms, may and do end in resolution under medical treatment within 48 hours. The medical man called to attend an early condition which he suspects to be due to an acutely inflamed appendix finds himself in a very responsible position. He may elect to wait upon events and thereby incur disaster, or he may risk the confidence of his client by insisting upon an immediate operation. In this dilemma, what data are available to enable one to come to a conscientious decision?

In these circumstances I rely on what I have called the epigastric syndrome. This is a group of signs to be met with quite at the beginning of the gangrenous form of appendicitis. It is well marked during the first six hours and well in advance of the classic signs in the right iliac region. The patient—a child or young adult most commonly—complains of violent pain referred to the epigastrium. There is usually vomiting and the knees are not drawn up. An abdominal examination shows marked tenderness localised to the left upper epigastric region, with cutaneous hyperæsthesia within the same limits. The upper segment of the left rectus muscle is in a state of contraction and feels rigid to palpation. The right iliac region, on the contrary, betrays neither swelling, rigidity, tenderness, nor hyperæsthesia at this stage of the process. The temperature is often only slightly raised—99°–100° F.—and may become normal again as the syndrome passes. The pulse is a more reliable guide—90–120—and either does not decline with the fall of temperature, or may become progressively faster, and shows increasing tension. The duration of the syndrome varies ; it is most apparent during the first six hours of the attack, but it may still be recognisable in part so long as 18 or 19 hours after the beginning of epigastric pain. The last element to disappear is the tonicity of the left rectus.

I recently saw a case of gangrenous appendicitis in a boy of 12 years with a history of intense pain in the epigastrium together with vomiting. The temperature at the onset was 100° F., falling to 99° 12 hours later ; the pain was then passing off and the vomiting had ceased. When seen in consultation 18 hours after the commencement of the illness, there was no abdominal pain in any region, the temperature was normal, and the child was anxious to eat. He was apparently well, and that was the opinion of the parents. But there was still tonicity of the left rectus present in the upper segment, the pulse was 120, and there was the clear history of the rest of the syndrome. As yet there were absolutely no right iliac phenomena and no pain or tenderness in any region of the abdomen. Still, an immediate operation revealed an acutely inflamed appendix of the thickness and length of an adult index finger with a patch of gangrene 1 cm. from the tip.

As regards the ætiology of the syndrome, I have attempted to explain elsewhere[1] why signs and symptoms referable to the greater curvature of the stomach should be caused by a superacute gangrenous form of appendicitis.

The practical point is that the syndrome is transient. This being so, it is important for the family medical adviser to observe and to recognise the epigastric syndrome at the beginning of an attack, since to my mind it is a definite warning of the gravity of the process, and is in itself a formal indication for immediate operation. I would point out that the syndrome is almost never observed in the hospital wards—unless among the personnel—since the patient is seldom admitted early enough. But in general practice the syndrome can be recognised, and when present enables the medical attendant to decide definitely against temporising.

I am, Sir, yours faithfully,

R. M. Rowe,

Surgeon in Charge Out-patient Dept.,
French Hospital, London, W.C.

Dec. 14th, 1925.

AIR EMBOLISM DURING FALLOPIAN INFLATION.

To the Editor of The Lancet.

Sir,—Air inflation of the Fallopian tubes has become firmly established as a means of investigating cases of sterility, and the chief contra-indication is any evidence of pelvic inflammation ; apart from this the time of the menstrual period must be carefully avoided and the patient should be a suitable candidate for pregnancy. In a paper read before the Gynæcological Section of the Royal Society of Medicine on March 5th, 1925, I gave it as my opinion that air embolism must be regarded as one of the dangers, more particularly in those methods which employ high pressures such as 200 mm. Hg and over. At that time I had not seen or heard of a report of such a case ; however, on Oct. 15th last I encountered one which fortunately did not terminate fatally.

Mrs. A., aged 24, married five years, with scanty and irregular menstruation, came under observation for sterility. The usual examination and procedure showed that she had a small uterus, and the husband was normal. I determined to ascertain whether her Fallopian tubes were patent, and having arranged a date which fell in between periods, she was given glycerine plugs to be applied to the cervix on the two nights preceding the test. On Oct. 15th she was placed on the couch in the Trendelenburg position and the hollow dilator passed into the uterus, the bulb being attached to it. The pressure was gradually raised to 150 mm. Hg approximately. The patient complained of some pain in the pelvis, but no air escaped into the peritoneum ; the pressure was maintained for a few seconds when she became very restless, throwing her head about from side to side. Her breathing had become difficult and she was cyanosed, but was able to answer when questioned. Her condition grew worse and she became unconscious with slow and shallow respiration ; the pulse could be detected at the wrist, but was weak and small. The heart sounds were heard clearly but faintly, and no abnormal sounds could be detected. The corneal reflex was lost and the limbs were completely relaxed. She remained in this condition for about 20 minutes and then slowly regained consciousness. She was admitted to hospital and with the aid of cardiac stimulants recovered fully and was discharged the next morning.

I have no doubt that this was a case of air embolism, and it corresponds fairly closely with cases reported by K. V. Trubshaw,[1] R. S. Roper,[2] and A. Fullerton [3] after urethroscopy. I think the reason the symptoms were not more severe was due to the small quantity of air insufflated and the comparatively low pressure employed, and secondly to the immediate suspension of the inflation and withdrawal of the tube, thus promptly lowering the pressure and preventing the escape of any more air into the vessels. The symptoms were entirely cerebral and there was no indication of frothing or churning in the heart, therefore the air-block probably occurred in the capillaries of the brain. There was no history of fits in the patient herself nor in the family history, the urine was normal, and the vessel walls were healthy. The possibility of air embolism suggests the importance of air inflation being carried out at a time remote from the menstrual period and in the absence of uterine hæmorrhage, and secondly it is of great importance that the uterine cannula should be free in the uterine cavity and not buried in the wall of the uterus, when one or other or both of the following results would ensue : (1) the inflation would be negative, (2) there would be a grave risk of producing air embolism.

I am, Sir, yours faithfully,

Sidney Forsdike, M.D., F.R.C.S.,

Surgeon to Hospital for Women, Soho-square, W.

Dec. 8th, 1925.

THE TREATMENT OF RHEUMATIC AFFECTIONS BY INTRAVENOUS INJECTIONS OF SODIUM IODIDE AND SALICYLATE.

To the Editor of The Lancet.

Sir,—For several years past I have been treating rheumatic and other affections by intravenous injection. 15 gr. of (natural) sodium salicylate are boiled in a test-tube with 20 c.cm. of distilled water and 15 gr. of sodium iodide are added. I use a 20 c.cm. record syringe with eccentric nozzle and a sharp needle of No. 17 bore. The injection may be given in the consulting-room and there is usually no reaction. Occasionally there may be a slight feeling of coldness after about half an hour, which passes off in a few minutes. I have never seen thrombosis.

Improvement after injection is rapid and may be dramatic. In a case of acute sciatica within two minutes of the injection the patient could lift his thigh and walk across the room. Two days afterwards there was still tenderness on pressure over a certain place in the course of the nerve which disappeared after a second injection. On the fourth day the patient played a full round of golf. Some years ago I gave one injection to a Parsi doctor who had suffered from sciatica for six months ; within half an hour the pain disappeared and never returned. Dr. R. S. Bernard, of Sidmouth, tells me that he has just cured a chronic case of sciatica of four years' duration with two injections and that he is using this method largely for obstinate rheumatic affections. I am treating two cases of osteo-arthritis in this way at present and they are delighted with the relief afforded.

I think these drugs, when given by the mouth, undergo changes which prevent them from acting in the way they do when injected intravenously.

I am, Sir, yours faithfully,

F. J. W. Porter,

Major, R.A.M.C. (ret.).

Budleigh Salterton, S. Devon, Dec. 12th, 1925.

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[1] Le Diagnostic précoce de l'Appendicite aiguë, La Presse Médicale, May 5th, 1923.

[1] Brit. Med. Jour., 1925, i., 112.

[2] The Lancet. 1925. i., 126.

[3] Ibid., p. 256.

GLYCOSURIA AND LIFE INSURANCE.

To the Editor of THE LANCET.

SIR,—I wish to call attention to the following case. A healthy man, of wiry physique and clear family and personal history, was recently totally rejected by a well-known insurance company on account of alleged glycosuria, the urine having been tested at the office by boiling with a blue solution, and the remainder of the specimen poured down the sink. He was subsequently sent to me by his own medical adviser, when I estimated the sugar content of both blood and urine, after a meal containing a very large quantity of carbohydrate and sugar. The urine contained 0·08 per cent. and the blood 0·101 per cent. of sugar respectively. Not only, therefore, was this man not a diabetic, but his renal threshold and blood-sugar content being lower than normal, he was, if anything, a better risk in regard to his carbohydrate metabolism than the normal man. These facts were given to the company, who simply retorted that they intended to abide by their decision. The injustice of this procedure is evident, especially as the patient's prospects in regard to assurance in another company are prejudiced by his having to disclose his previous rejection.

What remedy has the man against this autocratic ignorance? I should be glad to know.

I am, Sir, yours faithfully,
A. KNYVETT GORDON, M.B.

Bedford-square, W.C., Dec. 14th, 1925.

LIPIODOL IN BRONCHO-PULMONARY DISEASE.

To the Editor of THE LANCET.

SIR,—The value of lipiodol in the diagnosis of broncho-pulmonary conditions and its possibilities in treatment are now being widely recognised. Simplification of any technique for introducing the oil into the bronchi is therefore of the greatest importance. The reports that I have read deal with methods involving puncture of the trachea or the passing of a bronchoscope, but I would point out that it is easily possible in the great majority of adult patients to introduce the lipiodol by means of an ordinary laryngeal syringe without inflicting upon them the very severe discomfort of a bronchoscope. I have practised this at the Royal Chest Hospital and found that after anæsthetising the larynx the patients will tolerate the introduction of lipiodol satisfactorily, and that by making them incline to one side or the other the oil can be made to run into both sides of the lung. It would obviously be very difficult, especially in this country, to persuade patients to accept the repeated passage of a bronchoscope under a local anæsthetic, and there are many who would not tolerate it even the first time.

I am, Sir, yours faithfully,
A. M. ZAMORA.

Devonshire-place, W., Dec. 2nd, 1925.

GLYCERINE AS A LYMPHAGOGUE.

To the Editor of THE LANCET.

SIR,—With reference to your report of a paper read by me on Puerperal Infection at the Section of Obstetrics, Royal Society of Medicine (THE LANCET, Dec. 12th, p. 1229), the sentence "The mixture he used was a 10 per cent. solution of tincture of iodine in glycerine, the iodine promoting the flow of lymph into the cavity of the uterus," should read "The mixture he used was a 10 per cent. solution of tincture of iodine in glycerine, the iodine helping to stimulate uterine contractions." My whole paper was on the effects of producing a flow of lymph into the cavity by using glycerine, the iodine merely being introduced as a stimulant.

I am, Sir, yours faithfully,
H. J. PHILLIPS.

Oldham, Dec. 14th, 1925.

Obituary.

JOHN E. ESSLEMONT, M.B., CH.B. ABERD.

THE death is announced at Haifa of Dr. John Esslemont, who was well known to the medical profession in many capacities, though for the last two or three years the state of his health had prevented him from practising and had necessitated his residence abroad, much of his life lately having been spent in Palestine.

John Esslemont was born at Fairford Cults in 1873, and graduated with distinction in medicine at the University of Aberdeen. He gained the Philip Research Scholarship in 1898 and proceeded to post-graduate work at Berne and at Strassburg. On return to Aberdeen he became assistant to the late Prof. J. T. Cash, the well-known professor of materia medica in that university. But at that early stage his professional career was interfered with by his health. He was forced to leave Aberdeen, and for some seven or eight years he travelled for his health, with intervals of practice, in Australia and South Africa—he was at different times resident surgeon at the Ararat Hospital, Victoria, Australia, and acting district surgeon at Kroonstad, South Africa. In 1908 he returned to England and became medical superintendent at the Home Sanatorium, West Southbourne, Bournemouth. During the 15 years which he held that post he became known as an ardent worker for the prevention of tuberculosis, his published articles including contributions to THE LANCET upon sanatorium treatment and to other medical and scientific journals upon the possible eradication of tuberculosis. He was a strong advocate of the formation of garden cities for the victims of tuberculosis, while another subject on which he thought and wrote much was the institution of a State medical service. In the last years of his life Dr. Esslemont became deeply interested in a religious movement having its rise in Persia, and some two years ago he wrote a full account of the tenets of this cult with the result, it is understood, that in the United States many adherents were attracted to it.

The medical profession has lost in Dr. Esslemont an interesting man, highly equipped on many sides of medicine and medical politics, and possessed of unusual intellectual gifts.

HILDA GORDON JAMESON, M.B., CH.B. BIRM.

WE regret to announce the death of Dr. Hilda Gordon Jameson at the early age of 26. Miss Jameson was educated at the Westbourne Council School, where she won a borough scholarship, after which she studied at Bournemouth College and later at the University of Birmingham. Here she took the degree of Bachelor of Science at a very early age and graduated with the M.B., Ch.B. in 1923, securing the gold medal in clinical surgery. She was appointed junior medical officer at the Birmingham City Fever Hospital and held appointments also at the Women's Hospital, Sparkhill. She was then elected senior house surgeon at the Children's Hospital, Western Bank, Sheffield, where her premature death occurred from pneumonia after a week's illness. Miss Jameson had started her career so well that her death at its outset must be regarded as a distinct loss to the medical profession, while general sympathy will be extended to her family.

GEORGE PADDOCK BATE, M.D. BRUX., F.R.C.S. EDIN., C.B.E.

THE death of Dr. Paddock Bate, by which our profession has lost one of its oldest practitioners, occurred on Dec. 1st, on the eve of his eighty-second birthday, at his residence in Hackney. He was a fine example of a practitioner whose knowledge of hygiene kept abreast of the science, and who developed into an important sanitary authority. A student and prizeman at Westminster Hospital, he qualified over 60 years ago as M.R.C.S. Eng., taking later the F.R.C.S. Edin. and the M.D. Brussels. He carried on a large general practice, and was also divisional surgeon of the J Division of the Metropolitan Police, a certifying factory surgeon, medical referee under the Workmen's Compensation Act, and an examiner in sanitary science to the Civil Service Commissioners. He was appointed medical officer of health for Bethnal Green nearly 50 years ago, and held the appointment until 1919, his position as a sanitary officer being recognised by his election to the presidency of the Society of Medical Officers of Health. He was an expert microscopist, and throughout his life spent much of his spare time in microscopic studies. He was also an expert worker with the lathe, turning in metal and wood, and had a real flair for the comprehension of intricate machinery. His favourite recreation was chess, and he was one of the original members of the Four-handed Chess Club. He held his post of certifying factory surgeon for the exceptionally long period of 35 years, and as far as one thing more than another in his useful career may be considered to have gained him the distinction of C.B.E., it was the thoroughness with which he discharged his factory work. He was also surgeon-lieutenant to the 5th Battalion of the Rifle Brigade.

Dr. Bate married Elizabeth, the daughter of the late Mr. Thomas Farr, and one of his sons, Dr. John Bate, succeeded him in his practice.

Medical News.

University of London.—At examinations held recently the following candidates were successful:—

THIRD (M.B., B.S.) EXAMINATION FOR MEDICAL DEGREES.

Honours.—Hannah Billig (*a*), London Sch. of Med. for Women; Roland H. Boggon (*d*), St. Thomas's Hosp.; Margaret Du Boulay Evans (*e*) and Alice M. C. Macpherson (*b*), London Sch. of Med. for Women; Walter R. Spurrell (*b*, *d*, University Medal), Guy's Hosp.; William A. Taylor (*a*), London Hosp.; and Paul B. Wilkinson (*a*, *d*), King's Coll. Hosp.

(*a*) Distinguished in Medicine. (*b*) Distinguished in Pathology. (*d*) Distinguished in Surgery. (*e*) Distinguished in Midwifery.

Pass.—Agnes L. Adam, London Sch. of Med. for Women; Arthur J. Amor, Middlesex Hosp.; Roland G. Anderson, St. Bart.'s Hosp.; Geoffrey Anderton, St. Mary's Hosp.; Colin B. Andreae, Guy's Hosp.; Kathleen J. Atkinson, King's Coll. Hosp.; Diana J. K. Beck, London Sch. of Med. for Women; Margaret A. L. Buckner and Dorothy M. Campbell-Meiklejohn, Univ. Coll. Hosp.; Enid A. Ceiriog-Cadle, London Sch. of Med. for Women; Florence C. Churcher, Univ. Coll. Hosp.; Eileen M. Clarke, Vera E. Claxton, Marian B. Coleman, and Dorothy Collishaw, London Sch. of Med. for Women; Anthony B. Cowley, St. Bart.'s Hosp.; Donald P. Crawford, St. Thomas's Hosp.; Reginald N. Curnow, St. Bart.'s Hosp.; Reginald Y. Dawbarn, University of Liverpool; Mostafa Dia, St. Mary's Hosp.; Ethel Downing, London Sch. of Med. for Women and St. Mary's Hosp.; David M. B. Evans, Charing Cross Hosp.; Desmond W. G. Faris, London Hosp.; Helen E. Fergusson, Charing Cross Hosp.; Cyril F. Fernando, Univ. Coll. Hosp.; Geoffrey R. Ford, Guy's Hosp.; Donald Frost, London Hosp.; Cecil P. R. Gibson, St. Thomas's Hosp.; George S. Hale, St. Bart.'s Hosp.; Frederick J. S. Hall, St. Mary's Hosp.; Kathleen M. D. Harding, London Sch. of Med. for Women and St. Mary's Hosp.; Noel G. Harris, St. Thomas's Hosp.; Constance E. Harrison, London Hosp.; Freda K. Herbert, King's Coll. Hosp.; Margaret R. Herford, St. Mary's Hosp.; Leslie G. Housden, Guy's Hosp.; John C. Hoyle, University of Manchester; Marjorie B. Hubert, London Sch. of Med. for Women and St. Mary's Hosp.; Edward C. Hudson, London Hosp.; Dorothea A. C. Hunt and Adèle H. Jacob, London Sch. of Med. for Women; Maurice E. M. Jago, Guy's Hosp.; Marjorie H. James, London Sch. of Med. for Women; Herbert M. R. Jones, Middlesex Hosp.; Kathleen M. Lankester, London Sch. of Med. for Women; Herbert Lord, Univ. Coll. Hosp.; Catherine B. McArthur, London Sch. of Med. for Women; Douglas G. Martin, St. Bart.'s Hosp.; Cecil P. Miller, St. George's Hosp.; Geoffrey O. Montgomery and Eileen S. Morris, Univ. Coll. Hosp.; David C. Mundy, University of Birmingham; Eric E. Neser, Guy's Hosp.; Frances C. Nicklin, London Hosp.; Muriel L. M. Northcote, London Sch. of Med. for Women; Maurice C. O'Connor, St George's Hosp.; Milroy A. Paul, King's Coll. Hosp.; Philip R. Peacock, Middlesex Hosp.; Marie Pedersen, London Sch. of Med. for Women; George H. Pitt, Guy's Hosp.; Thomas W. Preston, King's Coll. Hosp.; Montague D. Rawkins, St. Bart.'s Hosp.; Dorothy M. Rees and Nellie H. Reynolds, King's Coll. Hosp.; Eric W. Riches, Middlesex Hosp.; William G. Roberts, Guy's Hosp.; Thomas Robson, St. Thomas's Hosp.; William F. Roper, Guy's Hosp.; William H. Royal, University of Bristol; Navroji K. Sahiar, Grant Medical Coll. and Univ. Coll. Hosp.; Katharine F. E. Sanders, King's Coll. Hosp.; Stephen J. Scurlock, London Hosp.; Mung Bing Seng and Cyril Shepherd, Guy's Hosp.; Kenneth A. Soutar, St. Thomas's Hosp.; Joshua Stein, Univ. Coll. Hosp.; Ruby O. Stern, Charing Cross Hosp.; Leanagé Don John Telesphor and Alan K. Thomas, Univ. Coll. Hosp.; George W. R. Thomson, St. Thomas's Hosp.; Jean S. Thomson, London Sch. of Med. for Women; William G. Thwaites, St. Thomas's Hosp.; Beatrice E. Turner and Bertha Turner, London Sch. of Med. for Women; Neville A. A. van Buuren, Univ. Coll. Hosp.; Edward G. L. Walker, St. Thomas's Hosp.; John H. M. Walker, Univ. Coll. Hosp.; Helen D. Watson, London Sch. of Med. for Women; Mary A. Wiles, King's Coll. Hosp.; and Muriel M. Yates, London Sch. of Med. for Women and St. Mary's Hosp.

The following students have passed in one of the two groups of subjects:—

Group I.—Roderick T. Bannister, St. Bart.'s Hosp.; John R. Blazé, Ceylon Medical Coll. and Univ. Coll. Hosp.; Margaret H. Brown, Charing Cross Hosp.; Dorothy Durance, London Sch. of Med. for Women; William Fletcher-Barrett, St. George's Hosp.; Edith L. Gould, London Sch. of Med. for Women; Francis H. K. Green, St. Bart.'s Hosp.; Kempton P. Hare and Dorothy M. Howse, Univ. Coll. Hosp.; Ruth T. Hurnard, London Sch. of Med. for Women; Iorwerth H. Jones, Charing Cross Hosp.; Ambrose J. King, London Hosp.; Nora M. Leesmith, St. Mary's Hosp.; Gwynedd M. E. Olive and Catherine E. Orr-Ewing, London Sch. of Med. for Women; Howard L. Peake, Guy's Hosp.; John Pearce, Westminster Hosp.; Charles E. Pearsons, St. Bart.'s Hosp.; Elsie E. A. Ridley, London Sch. of Med. for Women; Aaron G. Silver, Middlesex Hosp.; Norman R. Smith, St. Thomas's Hosp.; Kenneth H. Southall, Univ. Coll. Hosp.; Frederick O. T. Strange, King's Coll. Hosp.; Herman Treissman, St. Bart.'s Hosp.; Kathleen E. Tresilian, London Hosp.; Reginald L. Waterfield and William S. Whimster, Guy's Hosp.; Emily A. C. Wilson, Charing Cross Hosp.; and Jessie Wiltshire and Ada R. Winter, Univ. Coll. Hosp.

Group II.—Harold C. Beccle and Louis F. Beccle, Guy's Hosp.; Philip S. Bell, Westminster Hosp.; Samuel Berman and Eric H. J. Berry, Guy's Hosp.; Frank A. Bevan and Ernest J. Blackaby, St. Bart.'s Hosp.; Margery G. Blackie, London Sch. of Med. for Women; Louis N. R. Comty, London Hosp.; Anne A. Craig and Victoria M. Crosse, London Sch. of Med. for Women; Evelyn J. Curtis, King's Coll. Hosp.; Gweneth M. Daniel, Westminster Hosp.; David J. Davies, Middlesex Hosp.; Howell J. Davies, St. Mary's Hosp.; Thomas D. Deighton, St. Bart.'s Hosp.; Margaret H. Duncan, London Hosp.; Harry G. Estcourt, Middlesex Hosp.; William G. Evans, St. Mary's Hosp.; Duncan B. Fraser, St. Bart.'s Hosp.; Winefride M. Gibson, Charing Cross Hosp.; Agness H. S. Gray, London Sch. of Med. for Women; John G. Hamilton, London Hosp.; Helen M. Harris, London Sch. of Med. for Women; Frederick C. Haward and William E. Heath, St. Thomas's Hosp.; Thomas R. Hill, Guy's Hosp.; Richard C. Howard, St. George's Hosp.; Leslie I. Hyder, King's Coll. Hosp.; Amelia M. Ison, Charing Cross Hosp.; Herbert N. James, St. Mary's Hosp.; Isabel E. S. James, King's Coll. Hosp.; Robert O. Jones, Middlesex Hosp.; Frances M. Kenyon, King's Coll. Hosp.; Howel Lewis, Guy's Hosp.; Reginald H. Little, St. Thomas's Hosp.; James H. Macpherson, King's Coll. Hosp.; Joan G. Malleson, Charing Cross Hosp.; John P. Monkhouse, St. Mary's Hosp.; Mary A. Monro, London Sch. of Med. for Women; Margaret I. Neal, London Hosp.; John O. Oliver, St. Thomas's Hosp.; Stephen M. Power London Hosp.; Janet McL. Robertson and Constance G. Sloan, St. Mary's Hosp.; John S. Symons, London Hosp.; Josephine I. Terry, St. Mary's Hosp.; Janet Welch, London Sch. of Med. for Women; and John C. Young, Guy's Hosp.

Royal College of Surgeons of England.—An ordinary meeting of the Council of the College was held on Dec. 10th, Sir John Bland-Sutton, the President, being in the chair. Mr. Charles Herbert Fagge (Guy's Hospital) was re-elected, and Mr. Russell John Howard (London Hospital) was elected a member of the Court of Examiners in Surgery.—With reference to the resolution carried at the annual meeting of the Fellows and Members, the following reply was adopted: "The Council has fully and earnestly considered afresh, at ordinary meetings and at a specially convened meeting, the question of the direct representation of Members on the Council, and has arrived at the following decision. In view of the urgent need for greater facilities for carrying on the examination work of the College, the Council proposes to proceed with the application for a Supplemental Charter to effect some modifications of the existing arrangements and at the same time to remove inequalities in the status of men and women holding the Diplomas of the College. The Council has confined this proposed Supplemental Charter to points which it believes could not reasonably be regarded as controversial, and is not prepared to apply in this Charter for an alteration in the constitution of the Council of the College, having regard to the difference of opinion prevailing on that question."—Diplomas of Fellow were conferred upon 33 candidates as the result of the examination held from Nov. 19th to Dec. 3rd, for which 105 candidates presented themselves. Thirty-six were successful at the examination, but three—H. Burt-White

(St. Bart.'s), N. L. B. V. Eckhoff (Guy's), and A. C. Maconie (St. Bart.'s)—not having attained the requisite age are not entitled to receive the diploma. The following are the names and medical schools of the successful candidates :—

John B. Barnett, Birmingham and St. Mary's; Martin B. S. Button, London; George H. Caiger, Cambridge and St. Bart.'s; Jivan D. Dhruv, Bombay and St. Thomas's; Charles Donald, Aberdeen and London; Hugh Donovan, Birmingham; Keith M. K. Duff, Guy's; Norman Ll. Edwards, Manchester and St. Bart.'s; John D. Grierson, Edinburgh and London; Frank W. Harlow, Durham; Francis J. Jauch, Middlesex and London; Norman A. Jory, St. Bart.'s; Arthur R. Lister, Cambridge and London; Andrew C. McAllister, King's Coll.; Eric E. Mackay, Melbourne and London; Norman S. Macpherson, St. Thomas's; Leslie Morris, Manchester and St. Bart.'s; John A. Panton, Manchester and Guy's; Reginald T. Payne, St. Bart.'s; Andrew McK. Reid, Liverpool and London; Owen W. Roberts, King's Coll.; Clifford H. C. Searby, Melbourne and London; George S. Sinnatamby, Ceylon and St. Bart.'s; Archibald G. Smith, Glasgow and Middlesex; Francis A. R. Stammers, Birmingham; Edward P. Stibbe, Charing Cross; James W. T. Thomas, Cardiff and Middlesex; Trevor M. Thomas, Cambridge and St. Bart.'s; Guy L. Thompson, Cambridge and London; Basil M. Tracey, St. Bart.'s; Alfred S. H. Walford, Cambridge and St. Thomas's; Hugh A. B. Whitelocke, Oxford and King's Coll.; and Charles Paul Wilson, Middlesex.

Licences in Dental Surgery were also conferred upon 79 candidates who have passed the requisite examinations and have complied with the by-laws. The following are the names and schools of the successful candidates :—

G. Allen, London; F. L. Anthony, Royal Dental; S. D. Badman, London; I. A. Barlow, Guy's; M. A. Bassett, Royal Dental; Doreen E. Bath, Royal Dental; A. E. J. Berry, Manchester; C. B. Boyd, Guy's; J. M. W. Boyd, Liverpool; R. N. Bragg, Royal Dental; L. J. Brown, Guy's; J. M. Bruce, Royal Dental; W. S. Carey, Bristol; P. S. Clarence, Guy's; D. L. Collier, Univ. Coll.; L. C. Darch, Royal Dental; T. S. Davidson, Guy's; Ivy G. Dey, Royal Dental: E. F. S. Dodd, Guy's; O. B. Easom, Univ. Coll.; J. C. A. Edmonds, Royal Dental; C. H. Edney, H. Falk, M. Farwell, and G. C. Ferguson, Guy's; J. A. Flitcroft, Manchester; W. C. G. Ford, R. D. G. Gain, and P. Gerrard, Guy's; Florence A. Hagen, Univ. Coll.; E. A. Haigh, Manchester; R. H. Hancock, Guy's; F. C. Hatherill, Royal Dental; H. Hazell, Bristol; L. de P. Henriques, London; D. R. House, Bristol; J. E. Inman, Royal Dental; E. R. Irish, Guy's; L. C. Isbill, Royal Dental; H. A. Johnson, Birmingham; R. R. Jonas, London; H. D. Joyce and Mary M. Kelham, Royal Dental; H. D. Kendrick and J. W. Kingston, Guy's; Elsie E. Lennane, Royal Dental; J. Levi, Univ. Coll.; R. C. Lillicrap, Guy's; F. J. Lord and W. Martland, Royal Dental; W. I. Matthews, Liverpool; H. Metcalfe, Manchester; H. Middleburgh, London; V. R. Morgan, Birmingham; E. A. Moss and H. Myers, Guy's; Valda Isobel Neish, Royal Dental; B. W. C. New, Univ. Coll.; R. M. Phillips, Guy's; C. E. Place, London; A. W. Y. Price and T. L. Quinn, Royal Dental; R. E. Rix, Guy's; F. D. Robinson, Liverpool; W. R. Rowland-Hill, Guy's; R. B. Samolsky and G. M. Sanderson, Royal Dental; A. Schultz, London; B. M. Shaffner and J. F. R. Sheahan, London; F. W. M. Siems, Royal Dental; H. S. Smyth, Univ. Coll.; P. M. Taleyarkhan, Royal Dental; A. W. Thorne, Bristol; J. D. J. Visser and C. M. White, Guy's; G. C. L. Wildsmith, Royal Dental; S. Wood, Manchester; and E. C. Woodhead, Guy's.

University of Dublin, School of Physic, Trinity College.—At examinations held recently the following were the successful candidates :—

Final Medical Examination.

Part II., Medicine (M.B.).—*Charles R. Boland, *Seymour F. Heatley, *James W. Bowden, *Ernest E. Satchwell, Robert L. Forsyth, Ransome M. Allardyce, Derek St. Clair Mackenzie, Henry J. Roche, Arthur B. Brooks, Richard G. Keays, John H. M'Lean, Denis J. Cussen, Robert V. Franklin, James C. C. Boyle, Aileen Fair, George A. Miller, Wilfred Sinclair, William J. A. M'Mahon, Frances E. O'Connor, Mary C. Livingston, Charles E. M'Causland, Cicero G. Nel, Launcelot W. R. Haskins, William G. S. Maxwell, Mabel E. Brittain, Gideon J. Joubert, Dorothy A. M'Entire, Grace J. Rankin. Barend P. Pienaar, Wolsey C. Sloan, William R. G. Gallagher, Howard St. George M'Kenny, William J. Van Zijl, William Magowan, Mary S. Miller, William Russell, Elspeth V. D. Hewat, William G. Maule, Philip Coleman, Margaret W. Pike, Norah E. Fenton, Margaret E. Pedlow, Henrietta Armstrong, Jane D. Fulton, John Johnston, Patrick Wallace, and Charles H. Wilson.

Surgery (B.Ch.).—*William B. Roantree, *James E. M'Cauley, *Maiben A. W. Roberts, Philip B. Robinson, James W. Bowden, Jack M. Selkon, William J. A. M'Mahon, Grace J. Rankin, John E. Stokes, William G. S. Maxwell, James J. Cusack, Gladys M. A. Colquhoun, Elias Rakoff, Alexander D. M'Lean, Harry Nelson, Angel V. B. Crawford, Henry M. Nevin, George A. Walmsley, Robert A. J. Holmes-Ievers, Francis H. M'Kenna, John St. Clair, Wilfred Sinclair, William R. G. Gallagher, Kathleen M. Ball, Carol R. J. Boland, George G. McFarland, Philip Coleman, William O. Warrington, James C. C. Boyle, Aileen Fair, Philip F. Palmer, Margaret E. Pedlow, William J. Van Zijl, Cecil H. Keller, Daniel J. Roux, Denis J. Cussen, Francis V. Duke, Charles E. M'Causland, Jane D. Fulton, Elspeth V. D. Hewat, Dorothy A. M'Entire; Christopher Lord-Flood, Barend P. Pienaar, Patrick Wallace, William H. Coen, Margaret Hill, Frances E. O'Connor, Ahmed A. Shafik, and Harris Tomkin.

Midwifery (B.A.O.).—*Henry O. Clerke, *Robert E. Hadden, Arthur B. Brooks, Arthur J. Conlin, George S. Gardner, Kathleen I. Purdy, Gilbert T. L. Archer, Robert A. J. Holmes-Ievers, Thomas J. W. Keown, Robert H. Mitchell, Desmond Blewitt, Roy K. Carson, Arthur R. Gray, John C. T. Sanctuary, Edward H. Harte, George E. Dodds, James F. MacMahon, Margaret H. Donaldson, Johan N. S. Gouws, Silver Margaret E. Deane-Oliver, Richard T. P. Tweedy, Annette K. Wood-Martin, Thomas F. M. Woods, Victor G. Horan, Andrew E. A. O'Byrne, George W. H. Townsend, Cicero G. Nel, Arthur N. B. Odbert, Ernest H. Hall, Myer Hoffman, Isabella K. M'Neilly, Edward W. Bingham, Gerald V. A. Griffith, Daniel A. O'C. Quinlan, Victor St. George Vaughan, Herbert A. Brittain, Menzies L. M'Cauley, Mabel E. Brittain, Kathleen R. Byrne, James G. M'Dowell, Donal B. O'Sullivan-Beare, Lionel B. Somerville-Large; and Robert C. U. Warrington.

* Passed on high marks.

Final Dental Examination.

Dental Surgery and Pathology; Dental Mechanics and Metallurgy; Orthodontics.—William G. Martin, Frederic D. Matthews, George A. Cowan, Robert H. McKeag, and Maurice C. Cowan.

University of Oxford: ***Radcliffe Travelling Fellowship*, 1926.**—An examination for a Fellowship of the annual value of £300, and tenable for two years, will begin on Feb. 16th, 1926. The examination will occupy four days. Papers will be set in physiology, pathology, and preventive medicine, and a subject will be proposed for an essay. There will also be a practical examination in pathology. Candidates must have passed all the examinations required by the University for the degree of Bachelor of Arts and for the degree of Bachelor of Medicine. They must not have exceeded four years from the time of passing the last examination required for the degree of Bachelor of Medicine. The successful candidate must before election declare that he intends to devote himself during the period of his tenure of the Fellowship to the study of medical science and to travel abroad with a view to that study. Intending candidates should send their names, addresses, qualifications, &c., to the Regius Professor of Medicine, University Museum, on or before Feb. 3rd.

Old Epsomian Club.—The annual meeting was held at the Trocadero Restaurant on Dec. 10th, followed by the annual dinner. The routine business of the meeting showed that the club was in a flourishing condition, over 50 new members having joined during the past year. The dinner was attended by nearly 100 members, and a most pleasant evening resulted. Amongst the guest present were Sir Humphry Rolleston and Mr. Bernard Lamb, secretary of Epsom College. During the dinner a presentation was made to Mr. S. Maynard Smith of a George II. cream jug, in recognition of his services as hon. secretary of the club during the years 1919–24, during which time the club was entirely reconstituted.

North-East London Post-Graduate College.—This college is holding a special post-graduate course at the Prince of Wales's General Hospital, N., from Jan. 11th to Jan. 23rd. This will consist of demonstrations of present-day clinical methods in the mornings from 10.30 A.M. to 1 P.M. each day, demonstration of groups of selected clinical cases from 2 to 2.45 P.M., general hospital work, clinics, operations, &c., in the various general and special departments of the hospital from 2.30 P.M. onwards, and a clinical lecture each day from 4.30 to 5.30 P.M. These lectures, which are free to members of the Fellowship of Medicine as well as to members of the college, will be given by Dr. Eric Pritchard, Prof. Hugh MacLean, Dr. Frederic Thomson, Dr. P. Manson-Bahr, Dr. F. G. Crookshank, Mr. H. W. Carson, Dr. C. E. Sundell, Mr. A. E. Giles, Dr. L. R. Yealland, and Mr. W. E. Tanner. On the two Saturday mornings there will be demonstrations of illustrative cases at the L.C.C. Mental Hospital, New Southgate, N., and at the North-Eastern Fever Hospital, St. Ann's-road, respectively. A syllabus of the course, with full particulars, may be obtained from the Secretary of the Fellowship of Medicine, at 1, Wimpole-street, W. 1, or from the Dean of the College.

Fellowship of Medicine and Post-Graduate Medical Association.—Several courses have been arranged under the auspices of the Fellowship of Medicine for January, 1926, including an intensive course in general medicine, surgery, clinical pathology, and the special departments from Jan. 11th to 23rd at the Prince of Wales's General Hospital. From Jan. 4th throughout the month a series of lecture-demonstrations on Tuesdays and Saturdays at 11 A.M. will be given at the Bethlem Royal Hospital on psychological medicine. On the same date at the West End Hospital there will begin a month's course in neurology, including lectures and demonstrations of selected cases, at 5 P.M. The North-Eastern Hospital will hold a three weeks' course in infectious fevers on Wednesdays at 2.30 P.M. and Saturdays at 11 A.M. A course in diseases of children will take place at the Queen's Hospital from Jan. 18th to 30th. Classes will be held from 10 A.M. throughout the day in the various departments. At the National Hospital for Diseases of the Heart a whole-day course will take place from Jan. 18th to 30th. It is intended to hold special demonstrations in clinical surgery weekly throughout the year, and those arranged for next month are: Jan. 11th, 5 P.M., Mr. J. P. Lockhart-Mummery at St. Mark's Hospital; 19th, 2 P.M., Mr. H. S. Souttar at the London Hospital; and the 27th, 2 P.M., Mr. Rock Carling at the Westminster Hospital. Subsequent announcements of these will appear in the Medical Diary. The Fellowship of Medicine has arranged a further series of lectures from January to March on general subjects of interest. The opening lecture will be given by Dr. Herbert Spencer on Abdominal Palpations in Pregnancy (with lantern demonstration), on Jan. 21st, at 5 P.M., in the Hall of the Medical Society of London. A copy of each syllabus and of the Fellowship General Course Programme may be obtained on application to the Secretary of the Fellowship, 1, Wimpole-street, London, W. 1.

LONDON HOSPITAL.—At a meeting of the Court of Governors held last week Lord Knutsford announced that an anonymous donor had given £50,000 for research work at the hospital. The Queen has consented to succeed Queen Alexandra as President of the Hospital.

SOCIETY FOR THE STUDY OF INEBRIETY.—A meeting will be held in the rooms of the Medical Society of London, 11, Chandos-street, Cavendish-square, London, W., on Jan. 12th, 1926, at 4 P.M., when Dr. F. S. D. Hogg will open a discussion on Legislative Measures for the Control of Alcohol and Drug Addicts.

ROYAL SANITARY INSTITUTE.—This institute will celebrate its jubilee by holding an imperial congress in London from July 5th to 10th, 1926, over which Mr. Neville Chamberlain will preside. The opening meeting will be held in the Guildhall. Among those who will preside over the various sections and conferences into which the work of the congress will be divided are Sir William Pryke, Sir George Newman, Sir Charles Ruthen, Sir William Hardy, F.R.S., Sir Charles Wakefield, Sir William J. Collins, Mr. W. Phene Neal, Mr. G. W. Humphreys, and Dr. G. F. Buchan.

PEOPLE'S LEAGUE OF HEALTH.—The lecture programme for 1926 is now arranged and lectures will begin at the end of January next. Among those taking part in the courses are Sir Frederick Mott, F.R.S., Sir Maurice Craig, Sir Robert Armstrong-Jones, Dr. Bernard Hart, Dr. A. F. Tredgold, Dr. T. Beaton, Dr. R. H. Cole, Dr. W. A. Potts, Dr. Leonard Hill, F.R.S., Prof. R. H. A. Plimmer, Prof. E. Mellanby, Dr. M. J. Rowlands, Sir Henry Gauvain, Dr. P. C. Varrier-Jones, and Dr. F. E. Wynne. Lectures will be delivered at the house of the Medical Society of London, Chandos-street, W. 1, and at the Regent-street Polytechnic, London. Further particulars can be obtained from Miss Olga Nethersole at 12, Stratford-place, London, W.

ROSS INSTITUTE AND HOSPITAL FOR TROPICAL DISEASES, Putney Heath.—Sir Ronald Ross, Director-in-Chief of the Institute, sailed last week on the s.s. *Yorkshire* for Ceylon to set in motion a scheme which should, with the coöperation of all plantation companies, drive malaria out of the island. In certain parts of Malaya, Southern India, and Assam, groups of plantation companies are already dealing effectively with the cleansing of small areas. Sir Ronald Ross's intention is to deal with Ceylon as a whole, grouping plantation companies geographically, each group to be dealt with by a president malarial expert, who will carry out control measures adapted to the conditions peculiar of the particular locality, reporting from time to time to a central committee the progress made and difficulties encountered. Every facility will be given to individuals to take part in the campaign.

MEDICO-LEGAL SOCIETY.—The annual dinner of this society, held at the Holborn Restaurant on Dec. 11th, was well attended, professional women being present for the first time. Earl Russell, a past president of the society, took the chair in the absence of Lord Justice Atkin through illness. Lord Riddell proposed "Medicine and the Law," to which Sir StClair Thomson and Mr. T. R. Hughes, K.C., responded. Both foreshadowed a closer understanding between doctors and lawyers. Sir Ernley Blackwell, in proposing the "Medico-Legal Society," illustrated the mercifulness of the law by the fact that in a single year 75,000 convicted persons were set at liberty without punishment. Lord Russell, in reply, said that it was hoped in the next year or two to advance the scheme of a medico-legal institute for London, with laboratories and museum, the investigating side to be under the control of the Home Office, the teaching side to be associated with London University. Sir Bernard Spilsbury proposed "Our Guests," to which Dr. Vincent Dickinson and Sir A. W. Renton replied.

Lord Cave has been appointed a trustee of the Beit Memorial Fellowships for Medical Research.

THE Board of Governors of St. Mary's Hospital, London, have unanimously elected the Earl of Balfour to the office of President of the hospital.

LEEDS MEDICAL CHARITIES APPEAL.—The results of the appeal made in 1923 by Sir Edwin Airey, then Lord Mayor, has now been published. £90,327 was subscribed, all classes of the community contributing, and the money has been allocated as follows: the General Infirmary, £63,889; the Hospital for Women and Children, £10,003; the Public Dispensary, £9,935; and the Maternity Hospital, £6500. The first object of the appeal was to wipe off the hospital debts. This has been done, and the institutions receive also a valuable addition to their funds.

BRITISH LEGION: *British Serbian Units Branch.*—The annual dinner of this branch was held on Dec. 11th, Sir James Purves-Stewart, the President, being in the chair. Those present included Sir James Berry and Lady Berry, Dr. Alice Hutchison, Prof. Louise McIlroy, Lieut.-Colonel J. Johnston Abraham, Sir William Simpson, and Miss Flora Sandes, and all civil and military units were represented. Dr. Hutchison proposed the toast of the British Serbian Units Branch, Mr. C. R. Cooke-Taylor, chairman of the committee, replying. Miss Nina Boyle proposed the guests, Mr. Diouritch, minister plenipotentiary of the Serbs, Croats, and Slovenes in London, in reply, said that Serbia, like Great Britain, now wanted to forget the war and to live in peace. Bishop Keating and Sir William Simpson also responded for the guests. The health of the President was proposed by Prof. McIlroy and Sir James Purves-Stewart briefly replied.

DONATIONS AND BEQUESTS.—Mr. Henry Franc, of Fielden Park, West Didsbury, left £1000 each to the Manchester Royal Infirmary, to Ancoats Hospital and Dispensary, to St. Dunstan's Hostel for the Blind; £500 each to the Salford Royal Hospital, St. Mary's Hospital, Manchester, the Royal Manchester Children's Hospital, and the Manchester Victoria Memorial Jewish Hospital.—Mrs. Eleanor Emma de Wael, of Grange-gardens, Eastbourne, left £1000 to the London Hospital for naming a bed in perpetuity in memory of her son, Cecil Hubert.—Mr. James Shorrock, of The Beeches, Bowdon, Cheshire, left £2000 to the Manchester Royal Infirmary; £2000 to St. Mary's Hospital, Manchester; £1000 to the Altrincham Provident Dispensary and Hospital. His wife having predeceased him, a sum of £100,000 is to be divided between certain people and institutions, including the Manchester Royal Infirmary, the Altrincham Dispensary and Hospital, and St. Mary's Hospital, Manchester.—At a Court of Governors of the London Hospital on Dec. 9th, Lord Knutsford announced the receipt of a gift for research work of £50,000, from a donor who refused to permit his name to be mentioned. The donor has nominated a gentleman to represent him on a committee of three or four to decide how the money should be utilised.

Parliamentary Intelligence.

NOTES ON CURRENT TOPICS.

Smoke Nuisances.

ON Thursday, Dec. 10th, Dr. SALTER introduced a Bill to amend the law relating to smoke nuisances and noxious and offensive gases.

Vivisection.

On Tuesday, Dec. 15th, Lieut.-Commander KENWORTHY presented a petition from 2567 persons resident in Torquay praying that the practice of vivisection might be discontinued.

HOUSE OF COMMONS.

WEDNESDAY, DEC. 9TH.

Ill-health in the Navy.

Sir WALTER DE FRECE asked the First Lord of the Admiralty how many men had been discharged from the navy for ill-health in each of the last three years, including 1925; in how many cases these men had claimed that their disability was due to service; in how many cases these claims had been admitted and in how many rejected; and whether, in any case, the said applicants had had the right of appeal.—Mr. DAVIDSON (Parliamentary Secretary to the Admiralty) replied: The numbers invalided in the three years in question are:—1923, 1474; 1924, 1330; 1925 (from Jan. 1st to Nov. 30th), 1335. Any man invalided from the navy has the right of appeal to the Board of Admiralty, under whose directions the naval medical authorities would give his case careful and sympathetic consideration. As regards an appeal to any medical tribunal beyond the Admiralty, I would refer my hon. friend to the several replies already given in this House on the subject—e.g., on April 1st, Feb. 16th, and Dec. 15th last. I regret that the information asked for in the remainder of the question cannot be given without a detailed examination of the documents of over 4000 cases, for which no margin of staff is available.

Ill-health in the Army.

Sir Walter de Frece asked the Secretary of State for War how many men had been discharged from the army in each of the last three years, including 1925, for ill-health; in how many of these cases the men had claimed that their disability was due to service; in how many cases these claims had been admitted and in how many rejected; and whether, in any case, the said applicants had had the right to appeal and, if so, to whom.—Captain D. King replied: The number of men invalided from the army in each of the last three years ending on Sept. 30th have been 2920, 2673, and 2606 respectively. No statistics are available showing in how many of these cases the men claimed that their disability was attributable to service, but the number of cases in which disability was accepted as due to service were 373, 419, and 347 respectively. Applicants have no right of appeal against the decision of the Chelsea Commissioners. The Chelsea Commissioners are an independent body, who adjudicate upon the soldier's claim, and are not subject to the control of any Government department in administering the pension regulations.

Use of Toxoid in Schools.

Mr. Lindley asked the Minister of Health the names of the schools referred to on pages 57–60 of his report for 1924; whether toxoid was used at the B school as well as at the A school; whether the consent of the parents was obtained at the A school as well as at the B school; and where the toxoid was manufactured.—Mr. N. Chamberlain replied: The report referred to is the Report of the Chief Medical Officer of the Ministry. As regards the first and last parts of the question, I think it is undesirable in the public interest to state the names of these schools or of the laboratory where the toxoid was manufactured. The answer to the second and third parts of the question is in the affirmative.

THURSDAY, DEC. 10TH.

Institutional Treatment of Pension Patients.

Mr. Duckworth asked the Minister of Pensions the number of men who had been in continuous institutional treatment by his department since the war; and whether, with a view to possible speedier recovery, there was any transfer of such patients from one institution to another.—Major G. C. Tryon replied: I regret that I have no record of the number of cases which have been in receipt of continuous institutional treatment since their discharge from service. With regard to the latter part of the question, I may say that all cases in receipt of hospital treatment are subject to periodic inspection and report, and that special attention is given to those cases which have been for a prolonged period in receipt of this form of treatment, with a view to considering whether any other form of treatment or institution is more suitable to their condition.

Panel Doctors and Pension Patients.

Mr. Pielou asked the Minister of Pensions whether he was aware that the Ministry were referring disabled men for treatment to the panel doctor but, in some cases, refusing the recommendation of that panel doctor so far as the payment of treatment allowances was concerned; and whether he would see that due regard was paid by the Ministry to the treatment prescribed by the panel doctor in so far as it affected the treatment allowances regulations.—Major G. C. Tryon replied: I would remind my hon. friend that the conditions governing the grant of allowances under Article 6 of the Royal Warrant are not identical with those which determine certification for the purposes of health insurance, with which the insurance practitioner is concerned. For the purpose of the former allowances, certification by a medical officer of the Ministry is required under the terms of the Warrant. At the same time, any information which may be supplied by a panel doctor with regard to one of his pensioner patients is always taken into careful consideration in connexion with any certificate required to be given by an officer of the Ministry.

Reconsideration of Final Awards.

Mr. Pielou asked the Minister of Pensions the number of cases that had been recommended by local Ministry doctors for reconsideration by the correction of errors board; and the total number of such cases that had resulted in the final award being increased.—Major G. C. Tryon replied: I am unable to furnish statistics on the lines specified by my hon. friend. But I may say that up to Nov. 21st last 2550 cases had been dealt with by the Ministry. In 1402 of these cases a further grant had been made. In the remaining cases considered it had been found, either on local medical advice or otherwise, that there was no ground for disturbing the final award.

Area Deputy Medical Commissioners.

Mr. Montague asked the Minister of Pensions what was the number of medical officers holding the appointment of area deputy commissioner of medical services, and what was the average number of square miles in each area outside the Metropolis; and whether any deputy commissioner of medical services was responsible for more than one area as originally constituted under the War Pensions Act, 1921.—Major G. C. Tryon replied: The number of area deputy commissioners of medical services is 57, of whom five are stationed in the metropolitan areas. The square mileage of the districts covered by these medical officers is irrelevant to the question of their proper distribution which is made and, where necessary, varied in accordance with the distribution and needs of the ex-Service population. In the more densely populated districts, where the work is heaviest, the deputy commissioners are provided with assistants, who number 30 in all. The reply to the last part of the question is in the affirmative.

Pensioners in Mental Institutions.

Mr. Gibbins asked the Minister of Pensions what proportion of the 26,000 in receipt of treatment with allowances were inmates of mental institutions; what was the number of chronic cases which had been more or less under treatment since discharge; and whether, particularly in the case of neurasthenics, he would consider the possibility of awarding a good life pension, and release the men from treatment.—Major G. C. Tryon replied: About 6600 of the total number of cases under treatment are inmates of mental institutions. Apart from this class of case, there are a substantial number of men who have received prolonged periods of treatment since their discharge. Many of them—e.g., those suffering from paraplegia or severe cases of wound and injury—require constant medical attention and skilled nursing. Others, although happily not in this condition, are, in accordance with medical advice, receiving prolonged institutional treatment and care, combined, where possible, with occupation. It is not the intention of the Ministry that cases should indefinitely or unnecessarily remain in an institution, and where it is considered by my medical advisers that any case can more suitably be dealt with by discharge from institutional care, with an appropriate rate of pension, this course is adopted.

Lead Poisoning Among Pasters.

Mr. Robinson asked the Home Secretary how many cases of lead poisoning occurred among pasters engaged in the manufacture or repair of electric accumulators in the years 1921, 1922, 1923, and 1924 respectively; and whether any cases had been reported since the new code of regulations came into force on March 1st, 1925.—Sir William Joynson-Hicks replied: There were 5 such cases reported in 1921, 11 in 1922, 44 in 1923, and 42 in 1924. Since March 1st last there have only been 15 cases among pasters. The new regulations cannot be expected to have their full effect for a considerable time, but they appear to have already caused a substantial reduction in the number of cases.

Cases of Chemical Poisoning.

Mr. Robinson asked the Home Secretary how many cases of poisoning by carbon bisulphide, aniline poisoning, and chronic benzene poisoning had been reported since Feb. 1st, 1925; and what special steps were being taken by his department to diminish the risk of chemical poisoning.—Sir William Joynson-Hicks replied: Two cases of carbon bisulphide, and 30 cases of aniline poisoning have been reported, but no case of chronic benzene poisoning. Special steps are taken to diminish the risk by following up each case, and generally by the enforcement of the special precautions required by the Chemical Works Regulations of 1922. The whole subject is receiving special attention from the medical inspectors.

Medical Students and the Special Constabulary.

Mr. Scurr asked the Home Secretary whether he was aware that at a recent meeting of the medical students of London Hospital the dean of the students' guild stated that he had received a request from the Home Office that he should take steps to enrol the students of the hospital into a special branch of the special constabulary; that this action was taken in view of the possibility of industrial trouble in the spring; and that similar requests had been made to the deans of guild at St. Bartholomew's and Guy's Hospitals; and whether such request had been made by the Home Office, and the reason for the action.—Sir William Joynson-Hicks replied: I have not made any request such as the hon. Member suggests. The Commander of the

Headquarters Central Division of the Metropolitan Special Constabulary addressed an ordinary recruiting meeting of the students at the London Hospital last month, but I am informed that no statements as suggested in the question were made either by the commander or by the dean who introduced him to the meeting.

Epidemics and Closing of Schools.

Sir Hugh Lucas-Tooth asked the President of the Board of Education under what authority a county medical officer had the power to override the decision of the managers of a school, in a district infected with an epidemic, temporarily to close the school.—Lord E. Percy replied: I assume that my hon. friend is referring to public elementary schools. I am advised that Section 29 (1) and Section 29 (2) (*a*) of the Education Act, 1921, enable the local education authority to give directions to the managers of a school as to the days on which the school is to be open. On the question of closure on medical grounds, the authority would act, of course, upon the advice or with the approval of their medical officer. My hon. friend will find some useful information on the subject in the memorandum on closure of, and exclusion from school, issued jointly by the Ministry of Health and my department.

The Use of Luminal.

Mr. Scurr asked the Minister of Health what steps, if any, were taken by his department to draw the attention of the medical profession to the dangers arising from the use of the drug luminal, especially as, when used for the treatment of epilepsy, serious danger arose unless the treatment was continued although the epilepsy was cured.—Mr. N. Chamberlain replied: I am advised that the effects of the drug have been very fully discussed in the medical press, and in view of the amount of attention which it has received it seems justifiable to assume that those doctors who use it are well aware of its action and possible risks.

Diphtheria Mortality in West Bromwich.

Mr. Robert Richardson asked the Minister of Health why no reference was made, in the annual reports of the Chief Medical Officer of the Ministry of Health for the years 1922 and 1923, to the exceptionally high mortality and fatality from diphtheria which occurred in the county borough of West Bromwich in the years in question; whether any inquiry was made by his department in regard thereto and, if so, what special causes led to this exceptional incidence of the disease in this locality; how many of the cases were treated in hospital and how many proved fatal; and in how many of the cases treated in hospital was antitoxin administered and how many of such cases proved fatal.—Mr. N. Chamberlain replied: It is the fact that the mortality from diphtheria in West Bromwich was exceptionally high in 1922 and 1923, but the incidence was fairly constant throughout those years, and the occurrence presented no feature necessitating any special inquiry by my department or reference to the matter in the annual report of the Chief Medical Officer. The high incidence and fatality in 1922 were attributed by the medical officer of health to the fact that in the majority of cases medical assistance was not sought until the third or fourth day of the disease, and there was consequent delay in administering antitoxin. As regards 1923, the medical officer of health reported that more prompt recourse to medical assistance, which rendered earlier administration of antitoxin possible, had resulted in a reduction in the case mortality. In 1922, 96 cases were treated in hospital, of which 18 proved fatal; the figures for 1923 were 159 and 19 respectively. In all these cases antitoxin was administered.

Overcrowding in London Area.

Mr. Thurtle asked the Minister of Health if any statistics were available as to the number of rooms in the London County Council area which were occupied by four or more persons.—Mr. N. Chamberlain replied: The number of rooms in the administrative county of London occupied by private families at an average density of four or more persons per room was 18,847 at the census of 1921. No figures are available for any later date.

Inquiries into Conduct of Panel Doctors.

Lieut.-Commander Kenworthy asked the Minister of Health whether, as the National Health Insurance Act, 1924, required that he should exercise his judicial powers in particular cases through special tribunals, whether the committees of inquiry set up to consider whether the continuance of a practitioner on the medical list would be prejudicial to the service were such tribunals; and what other tribunals had been prescribed under Section 91 (*c*) of that Act.—Mr. N. Chamberlain replied: The inquiry committees in question are appointed in accordance with regulations made under Section 24 (2) of the National Health Insurance Act, 1924, and are not governed by the provisions of Section 91 of that Act. Regulations made under Section 91 provide for the submission of disputes of the kind referred to in Section 90 to a special body of referees. Apart from the body of referees constituted for this purpose, no tribunals have been set up under Section 91.

Lieut.-Commander Kenworthy asked the Minister of Health whether he was aware that a considerable section of insurance practitioners desired to be given a general right of appeal in the courts against his decisions; that this desire was recently voiced by a public conference of delegates representing not less than 5000 practitioners; whether he had refused to receive a deputation from that conference; and what steps he was taking to allay the widespread feeling of discontent which underlay the desire in question.—Mr. N. Chamberlain replied: The answer to the first part of the question is in the affirmative. As regards the second part, I have received the resolutions passed at the meeting to which the hon. and gallant Member refers, though I cannot share his estimate of its representative character. The reply to the third part of the question is in the affirmative, and the reason is that I have already discussed the matter with the Insurance Acts Committee of the British Medical Association, which represents the general body of insurance practitioners. As regards the last part, this question is engaging the attention of the Royal Commission on Health Insurance, and I do not propose to take any action pending their report.

FRIDAY, DEC. 11TH.

Death-rates Among Adults.

Colonel Day asked the Minister of Health the death-rate amongst adults, men and women separately, also that of children, occurring in those European countries of which statistics were available, also those occurring in Great Britain during the years 1922 and 1923, and to the last known date.—Mr. Neville Chamberlain replied: For England and Wales the figures asked for are as follows:—

Age groups.	Death-rates per 1000 living of each sex.					
	1922.		1923.		1924.	
	M.	F.	M.	F.	M.	F.
21 and over.	16·7	14·7	15·5	13·4	16·2	14·2
Under 5 ..	30·2	24·5	24·3	19·6	25·1	20·2
,, 10 ..	16·5	13·5	14·0	11·3	14·9	12·1
,, 15 ..	11·4	9·4	9·7	8·0	10·3	8·4
,, 20 ..	9·2	7·7	7·9	6·5	8·3	6·9
,, 21 ..	9·0	7·5	7·7	6·4	8·1	6·7

M. = Males. F. = Females.

With regard to Scotland, the hon. and gallant Member should address a question to the Secretary for Scotland. As regards other European countries, while in certain cases figures are available for the numbers of deaths during the years in question, no corresponding estimates of population appear to be available for the purpose of calculating mortality rates.

MONDAY, DEC. 14TH.

Cocaine Dens in India.

Colonel Day asked the Under-Secretary of State for India if there were at present any cocaine dens in the northern division of Calcutta, and the name of the deputy commissioner in charge of this division; and how long had he occupied that position.—Earl Winterton replied: Some information as to the illicit traffic in cocaine and the preventive action taken is given in the report of the Bengal Excise Department, extracts from which I shall be glad to have supplied to the hon. Member if he wishes. The reports do not contain the specific information asked for in the first part of the question, but special inquiry can be made if he so desires. The Deputy Commissioner of Police, Northern District, Calcutta, is Rai Purna Chandra Lahiri Bahadur, who was appointed on March 6th, 1918.

Poisonous Apple Tree Sprays.

Mr. Rennie Smith asked the Minister of Agriculture whether his attention had been drawn to the dangers of poisoning arising from the use of certain kinds of sprays on apple trees; whether such sprays were being used in this country; and whether he would take steps to warn fruit-growers as to sprays which entailed these dangerous consequences.—Mr. Guinness replied: I have received representations from time to time as to the possible risks involved by the use of poisonous washes on apple trees. Such washes are used in this country, but the applications are made so early in the season that the risk of any appreciable quantity of poison remaining on the apples when they are gathered is negligible. The results of an inquiry into this matter were published in the Ministry's *Journal* for September last, a copy of which I am sending to the hon. Member.

Mr. Rennie Smith asked the Minister of Health whether his attention had been drawn to the poisonous spraying of foreign apples imported into this country; what brands of apples were affected; and what steps he was taking to safeguard British consumers of apples.—Sir K. WOOD replied: Yes, Sir; as stated on June 25th last, the matter has been under the observation of my department for a number of years. My right hon. friend is sorry to say that recent analyses have shown the presence of increased quantities of arsenic on certain brands of imported Jonathans. The safeguarding of consumers is in the hands of the Port Sanitary and other local authorities, whom my right hon. friend is reminding of the necessity for strict supervision. He is, however, trying to arrange that measures shall be taken to effect the removal of the contamination before the apples are packed for export to this country.

Release of Asylum Patient.

Mr. ROBERT RICHARDSON asked the Minister of Health if he would cause inquiry to be made into the case of T. J. Hardwick, at present detained as an ex-Service patient in Chatham Asylum, Kent; was he aware that his mother was anxious to have him out on trial for a month under Section 55 of the Lunacy Act; that her own doctor had signified to the medical superintendent his willingness to look after the son, and that a suitable male nurse was available to take care of him while on trial, a course recommended by a member of the Board of Control; and would he take steps to see that no impediment was placed in the way of his temporary release on trial.—Sir KINGSLEY WOOD replied: My right hon. friend has made inquiries in this case. The power to grant leave on trial is vested by law in the visitors of the hospital on the written advice of the medical superintendent. The superintendent is, however, unable to advise the visitors that they should permit Mr. Hardwick to be absent on trial. A report made within the last few days shows that this is a dangerous patient, who is not fit at present to be discharged from institutional care. I would like to add that last year this patient was allowed out on leave in the care of his mother, but had to be brought back on the following day to the institution.

Constitution of the General Medical Council.

Lieut.-Commander KENWORTHY asked the Prime Minister if the Lord President of the Privy Council had been approached by any section of the medical profession with regard to the constitution of the General Medical Council; and what steps, if any, he had taken or proposed to take in this matter.—Major HENNESSY (Vice-Chamberlain of the Household) replied: The reply to the first part of the question is in the negative, and my noble friend, the Lord President of the Council, considers that the case for action, as suggested in the second part, does not, therefore, arise.

Powers of the General Medical Council.

Mr. BASIL PETO asked the Prime Minister whether he would consider the necessity of amending Sections 26, 28, and 29 of the Medical Act of 1858, in view of the obscurity of the procedure under the Act and the confusion of the powers of examining colleges and bodies and the General Medical Council, whereby persons whose names had been removed from the Register were required by the General Medical Council to prove that they possessed degrees of which they had been deprived, in consequence of the General Medical Council having removed them from the Register, before their names could be restored to the Register.—Major HENNESSY replied: I am asked by my noble friend, the Lord President of the Council, to state that he is informed that there is no difficulty in interpreting the sections of the Act of 1858 to which my hon. friend refers. It must be remembered that the General Medical Council cannot confer medical degrees or qualifications, nor can it annul such when once conferred. Moreover, it cannot place a man on the Register unless he possesses a degree or qualification. When, therefore, a practitioner has been deprived of his degree or qualification by the body which originally conferred it, that body must restore it before the General Medical Council can reverse its own previous decision.

Mr. BASIL PETO asked whether, when the General Medical Council removed any person from the Register for reasons given, the consequence was that the colleges or other examining bodies automatically withdrew that person's degree. If that were the case, how could such a person get on to the Register again, unless the original examining body acted in the matter.—Major HENNESSY replied that he must have notice of that question.—Mr. PETO pointed out that that was the original question on the paper.

Infant Mortality at Market Drayton.

Sir CHARLES OMAN asked the Minister of Health whether he was aware that the high infant mortality of Market Drayton still persisted and had persisted for 10 years or more; would he now publish the recommendations for its diminution made by the report of his medical inspector, omitting those which he considered confidential if there were any such; and, if not, would he send another medical inspector to inspect and report.—Mr. N. CHAMBERLAIN replied: I am aware that the infant mortality-rate in Market Drayton has generally been in excess of the average rate for the whole country, although this has not always been the case in the past ten years. As regards the second part of the question, I would refer my hon. friend to my previous answers on this subject. The county council are taking steps to provide a new infant welfare centre in this district, and the further inspection suggested in the last part of the question does not, therefore, seem to be necessary.

Treatment of Consumptives in Scotland.

Mr. SCURR asked the Secretary for Scotland whether he could state which local authorities in Scotland afforded sanatorium and other treatment to tuberculous persons without charge.—Sir J. GILMOUR replied: No local authority in Scotland, so far as I am aware, makes a charge to tuberculous patients or their relatives for sanatorium or other treatment provided by the authority.

TUESDAY, DEC. 15TH.

Tuberculosis Hospital near Bristol.

Captain GUNSTON asked the Minister of Health whether he was aware that the proposal of the corporation of Bristol to use Blaise Castle as a tuberculosis institution for advanced cases was strongly opposed by the inhabitants of Henbury, whose houses, school, &c., surrounded Blaise Castle, and would he have this matter further inquired into.—Sir K. WOOD replied: My right hon. friend has received a letter from the Henbury Parish Council objecting to this proposal. In the event of the Bristol Corporation applying for his approval to the use of the premises for the treatment of tuberculosis, this objection will be considered. My right hon. friend is advised, however, that there is no ground for considering that a properly conducted institution for the treatment of tuberculosis is in any way a danger to the health of the community among whom it is situated, and that no risk is incurred by living in the immediate neighbourhood of such an institution.

Institutional Treatment of Neurasthenia.

Mr. ROBINSON asked the Minister of Pensions the number of men in receipt of institutional treatment for neurasthenia, where the hospitals were situated, and what was the estimated total yearly cost of providing treatment for pensioners suffering from neurasthenia.—Major G. C. TRYON replied: The number of men in receipt of in-patient treatment for neurasthenia in the first week of the present month was 1809. The yearly cost of the treatment given in Ministry hospitals for this class of case is approximately £250,000. The following are the hospitals: Craigleith, Edenhall, Scotland; Castle Leazes, Newcastle; Harrowby Camp, Grantham; Saltash, Plymouth; Coombe Park, Bath; Ewell, Epsom; Orpington, Kent; Leopardstown Park, Dublin; and Craigavon, N. Ireland.

Disease Germs in Public Vehicles.

Colonel APPLIN asked the Minister of Transport whether he was aware that public vehicles were upholstered in rep, velveteen, and other soft and clinging material, and whether, as such material collected dirt and disease germs, and broadcasted them among the passengers, he would take steps to ensure the use of leather or other washable material in future.—Colonel W. ASHLEY replied: This is a matter for the individual licensing authorities, but I will bear in mind the suggestion that my hon. and gallant friend has made.

Deaths of Seamen.

Dr. WATTS asked the President of the Board of Trade whether he had received a resolution, adopted by the Council of the Royal Sanitary Institute, based on resolutions passed at a congress of that institution at Liverpool in July, 1924, to the effect that the classification in the Report of Deaths of Seamen, published by the Board of Trade, was antiquated and should be remodelled; and whether he was taking any steps in respect to this resolution.—Sir P. CUNLIFFE-LISTER replied: I have received a resolution from the Royal Sanitary Institute and also their detailed suggestions regarding the death statistics of seamen. The Permanent Consultative Committee on official statistics has appointed a special subcommittee to advise whether any alteration in the classification of these death statistics is necessary.

Pensions for Neurasthenia.

Mr. ROBINSON asked the Minister of Pensions the number of officers and other ranks that had been in receipt of pension for neurasthenia for four years or more; how many of these were in receipt of life pensions; and whether he would arrange for the men not in receipt of a final award to be boarded with a view to the award of life pensions, having regard to the psychological effect that a permanent pension would have on their disability.—Major G. C. TRYON replied: The number of pensions at present in payment for neurasthenia is about 32,000 of which about 12,000 have been awarded for life. Of the balance about 17,000 pensioners have been in receipt of pension for four years or more and I can assure the hon. Member that the possibility of making final awards in these cases is constantly kept in view in connexion with the medical re-examination of cases.

Appointments.

Gray, E. E. D., M.B., B.S. Lond., has been appointed Certifying Surgeon under the Factory and Workshop Acts for the Teddington District of the County of Middlesex.

University of Sheffield: Wilson, J. B. F., M.B., M.S. Lond., F.R.C.S. Eng., to one of the combined posts of Lecturer in Surgical Pathology and Assistant Curator of Pathological Museum.

Vacancies.

For further information refer to the advertisement columns.

Ascot, Heatherwood Hospital.—Res. Asst. M.O. £300.

Birmingham City.—Laboratory Attendant. £250.

Blackburn and East Lancashire Royal Infirmary.—Third H.S. £150.

Bombay, Gokuldas Tejpal Hospital.—Hon. P. and two Hon. S.'s.

Bristol General Hospital.—Hon. Asst. S. to Ear, Nose, and Throat Dept.

Durham, Holywood Hall Sanatorium.—Med. Supt. £850.

East London Hospital for Children and Dispensary for Women, Shadwell, E.—Morning Cas. O. At rate of £120. Also H.S. At rate of £125.

Elizabeth Garrett Anderson Hospital, 144, Euston-road, N.W.—Asst. Radiologist. £100. Also Anæsthetist. £5 5s.

Hospital for Sick Children, Great Ormond-street, W.C.—Res. Med. Supt. £300. Also H.S. £50.

Huddersfield, Royal Infirmary.—Jun H.S. £150.

Ipswich, East Suffolk and Ipswich Hospital.—H.P. and H.S.'s. Each at rate of £100.

Keighley, Victoria Hospital.—Res. M.O. At rate of £180.

London Temperance Hospital, Hampstead-road, N.W.—Cas. O. At rate of £120.

Manchester Ear Hospital, Grosvenor-square, All Saints.—Hon. Res. H.S. At rate of £150.

Manchester, Monsall Hospital for Infectious Diseases.—Jun. Med. Asst. £350.

Manchester, St. Mary's Hospitals.—Five H.S.'s. Each at rate of £50.

Middlesex Hospital, Mortimer-street, W.—Dental H.S. At rate of £50.

Norwich, Norfolk and Norwich Hosp.—Res. Anæsthetist. £150.

Plaistow Fever Hospital, E.—Second Asst. M.O. £200.

Plymouth, Didworthy Sanatorium, South Brent.—Res. M.O. £600.

Portsmouth Education Committee.—School M.O. £750.

Reading, Royal Berkshire Hospital.—Three H.S.'s. At rate of £150. Also Hon. Anæsthetist.

Royal Free Hospital, Gray's Inn-road, W.C.—Dist. Obstet. Asst. £100.

St. Mark's Hospital for Cancer, &c., City-road, E.C.—Anæsthetist. £25.

St. Mary's Hospital, W.—Asst. M.O. in charge of X Ray Dept.

Salisbury General Infirmary.—H.S. £150.

West London Hosp., Hammersmith-rd., W.C.—Hon. Obstet. Reg.

Westminster Hospital, Broad Sanctuary, S.W.—Obstet. Tutor and Registrar. £50.

The Secretary of State for the Home Department gives notice for a Medical Referee under the Workmen's Compensation Act for Falkirk District (Sheriffdom of Stirling, Dumbarton, and Clackmannan). Application should reach the Private Secretary, Scottish Office, not later than Jan. 5th, 1926.

Births, Marriages, and Deaths.

BIRTHS.

Hughes.—On Dec. 9th, at Woodville, Epsom, the wife of Alfred Morgan Hughes, *M.C.*, M.R.C.S., of a son.

Schaffter.—On Dec. 12th, at Isfahan, Persia, the wife of C. M. Schaffter, M.B., F.R.C.S.E., of a son.

Spero.—On Dec. 8th, at Lancaster Gate-terrace, W., the wife of Dr. G. E. Spero, of a son.

MARRIAGES.

Salisbury—Wright.—On Dec. 9th, at St. Mary's Church, Broughton, Lincs, Walter Salisbury, M.S., M.D. Lond., F.R.C.S. Eng., of Grimsby, younger son of Mr. and Mrs. F. G. Salisbury, of Bristol, to Constance Mary, only child of Mr. and Mrs. Wm. Wright, of Broughton Vale.

DEATHS.

Bishop.—On Dec. 13th, after short illness, at his residence, North Dene, The Park, Beckenham, Walter Beacall Bishop (of Alfred Bishop, Ltd.), aged 72.

Edwards.—On Dec. 4th, at 137, Withington-road, Whalley Range, Manchester, after long illness patiently borne, Emily Louisa Frances, the dearly beloved wife of the late John Edwards, M.R.C.S., L.R.C.P., late Senior Medical Officer, H.M. Prison Service.

Norbury.—On Dec. 10th, at "St. Margarets," Eltham, Sir Henry Frederick Norbury, K.C.B., M.D., F.R.C.S., Hon. Surgeon to the King, Inspector-General of Hospitals and Fleets, Royal Navy (retd.), aged 86.

Palgrave.—On Dec. 13th, Edward Francis Palgrave, M.R.C.S., F.R.C.P., Cheniston-gardens, Kensington, aged 49.

Ritchie.—On Dec. 10th, at Craigowan, Colinton-road, Slateford, Edinburgh, James Ritchie, M.D., in his 85th year.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Notes, Comments, and Abstracts.

THE DIAGNOSIS OF EARLY NERVOUS DISEASE.*

By Marjorie A. Blandy, M.B., B.S.,
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It is the common experience of neurologists that the first manifestations of disease of the nervous system are not sufficiently recognised by practitioners. It is not essential for the practitioner to be an expert in the differential diagnosis of organic nervous disease, but he should be able to recognise its presence. In neurology perhaps more than in any other branch of medicine is a careful case-history of paramount importance, and the so-called negative symptoms may be especially important. Diagnosis can frequently be made on the history alone; indeed, frequently has to be made on the history alone, for example, in cases of epilepsy and some cases of the post-encephalitic syndromes. It is often found by neurologists that some early but important symptom has been omitted by the patient in giving his history, because he thought it so slight and so transient as to be of no significance. Hence leading questions must be asked, such as whether there has ever been transient double vision, weakness of a limb, or even so impressive a symptom as temporary blindness. Unfortunately this belief in the triviality of such symptoms is sometimes shared by the medical attendant. Sometimes, however, a history may be perversely misleading though entirely accurate; for instance, the symptoms of cervical rib, a congenital abnormality, may appear at any age, generally following a change of occupation to one of increasing strenuousness and entailing pulling on the arms. A short while ago I had as patient a woman of 45 who had come down in the world and who only developed the symptoms of cervical rib after going to work in a boarding-house, where she had to carry heavy trays and pails up and down stairs.

It is not enough to look for a symptom or sign with a name, such as Romberg's sign or Babinski, or even to be satisfied with the presence or absence of the knee-jerk, but it is essential to be on the look out for deviations from the normal, or differences in the responses of the two sides of the body in one individual. The type of knee-jerk is of as much importance as its exaggeration or diminution. In early paralysis agitans the diagnosis of "nervous breakdown" is frequent in the absence of alteration in the reflexes, lack of tremor, and the characteristic rigidity. These cases may be labelled hysteria because of their slowness, their awkward movements, and the uselessness of their limbs. Similarly slight ataxia in early cerebellar disease may be considered functional in the absence of marked organic signs.

Psychological Changes.

The first sign of disease of the nervous system may be a psychological one—a change of disposition noticed by the patient's friends, and sometimes even apparent to the patient himself, but beyond his control. Such an alteration in character may occur in intracranial tumour, cerebrovascular disease, disseminated sclerosis, encephalitis lethargica, neuro-syphilis, and to some extent in severe cases of subacute combined sclerosis. In intracranial tumours there may be change in temperament preceding the onset of any physical sign, and certainly occurring before the patient seeks medical advice.

During the six years I recently spent as R.M.O. and Registrar at the National Hospital for the Paralysed and Epileptic, Queen-square, I was increasingly impressed by the localising value of the type of temperament displayed by patients suffering from tumours of the cerebrum; each type being characteristic of a certain locality.

Patients with extensive *frontal tumours*, and especially with left-sided ones, are slow and dull. If the corpus callosum is involved they tend to be curiously apathetic and vegetative. For example, Miss C., a doctor's sister, had been sent to a convalescent home by the sea for a year before admission with the diagnosis of neurasthenia, because, 18 months previously, she had had a few fits, following which she had become dull, had lost interest in what had usually interested her, and had lost all initiative. Only when vision began to fail, vomiting accompanied her headaches, and weakness of one side of the body began to develop did the nature of her trouble suggest itself to her brother. She had a large glioma of the left frontal lobe involving the corpus callosum. If the tumour be smaller, leaving intact a good proportion of frontal tissue, but quickly growing and hence irritating the surrounding frontal substance, the patient shows periods of excitability with great physical restlessness. He is quick to resent and to exaggerate fancied slights, such resentment amounting at times to delusions of persecution. These patients have to be approached with the greatest tact and self-control if they are to submit to examination. Time must be spent in gaining their confidence, they must be continually humoured, and each step of the examination has to be explained to them beforehand. If not they may resist, even with violence. I remember one man who collected his dinner plates and threw them at the nurse who, he fancied, had been inattentive. These patients are filled with suspicions. They are, however, jocose and facetious and inclined to make heavy jokes at which it is wise to be amused. They may be the life and soul of the ward. Oppenheim gave the name "Witzelsucht" to this symptom. Sometimes their jokes are quite good. A woman I saw at hospital, who had, incidentally, been allowed to go blind before seeking medical advice, remarked, on hearing the visiting physician mention the number of diopters of swelling of her discs, "My husband will be amused; fancy plus-fours in my eye." Another woman, who, with frontal lobe intact had been a shy retiring creature, was enabled through the presence of a tumour in that region to attempt coquetry with a member of the staff on his ward round.

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* A paper read at a meeting of the London Association of the Medical Women's Federation on Dec. 8th, 1925.

Patients with *temporo-sphenoidal* tumours, on the other hand, are facile, pleasant people, remaining undisturbed by alarming symptoms, such as dimness of vision, and soon forgetting each headache. They are incapable of taking very seriously the gravity of their condition. They are friendly, easy of approach, and amused by the examination, but seem lacking in depth of character. They are quietly behaved and free of spontaneous humour and facetiæ, nor are they physically restless.

It is obvious that temperamental changes, occurring early as they do, and in persons hitherto normal, are of significance, and in addition of definite localising value, especially where the physical signs are ill-marked. In *cerebral-vascular degeneration* psychological changes commonly occur in later life, producing the symptoms classed under the head of senility; but frequently the sufferer's age hardly entitles them to be classed among the aged. Local thromboses causing at the time temporary paralyses or aphasias may clear up, leaving some striking alteration in disposition or loss of recently acquired accomplishment. An instance is a male patient who had been a schoolmaster and lay preacher. This man, after recovery from a slight stroke, entirely lost his religion, to his wife's deep distress. I also remember a woman linguist who on recovery was unable to speak a word of French, in which language she had previously been proficient.

The smiling euphoria of *disseminated sclerosis* is almost pathognomonic. Once seen it is unmistakable and typical of that disease. There are depressed people among sufferers from disseminated sclerosis, but these are rare. The more hopelessly paralysed and incontinent these patients get, the more cheerful and patient they seem to become. This euphoria is an early, common one, and it may be said a merciful symptom. Actual psychoses do, very occasionally, occur in disseminated sclerosis, as the result of a plaque in the cerebral cortex. I have myself seen one such case—a girl in the early twenties with delusional depressive insanity of recent origin coupled with the typical signs of this disease.

In children, psychological changes following upon *encephalitis lethargica* are fairly common. The mental changes may be so characteristic as to leave no doubt as to the diagnosis; and yet all history of the actual attack itself may be lacking. The psychic changes may or may not be accompanied by neurological findings, nor is there any correlation between the severity of the mental disturbances and the physical signs. Indeed, as a rule, those cases showing most disturbance of conduct have the fewest physical signs. In two such cases published recently in America by B. I. Beverly and Mandel Sherman the interval between the appearance of the psychical change and of the onset of a Parkinsonian syndrome was in one case six months, and in the other two years. Both these children were referred by the juvenile court on account of disobedience, lying, fighting, stealing, and cruelty to children and animals; they were said to be entirely uncontrollable. One boy had a history of an illness three years previously during which he slept a good deal; the history of the second was entirely negative. In F. C. Shrubsall's cases of L.C.C. school children, the changes in conduct ranged from diminished power of attention at school to mental deficiency or to loss of moral sense. In a case of the latter quoted, three years after the attack, a girl of 10 took suddenly to lying, stealing, spitefulness, and wanting her own way in everything. In this case and in many others the intelligence tests showed no lowering of the intellectual level.

Uncontrollable outbursts of involuntary laughing or crying may be a symptom of organic brain disease before the physical signs of any cerebral lesion become manifest. Féré reports the case of an elderly man of 64 who used to become convulsed with laughter over trifles and was entirely unable to control the performance. A few months later this was followed by first a right and then a left hemiplegia. Patients with cerebral arteriosclerosis causing diffused patches of softening especially in the basal regions of the brain, likewise often show signs of an abnormal emotional state, which is undoubtedly the direct outcome of the disease. In these cases as a rule the stimuli are often inadequate and inappropriate, and the outbursts are irrelevant to the feelings of the patients. The patients are aware of this and resent their helplessness to control themselves, and it often leads to misunderstandings. Dr. S. A. Kinnier Wilson tells the story of a man with this affliction. He lost his heart to the ward maid; when her father demanded his intentions he burst out laughing.

Cerebral syphilis may often be ushered in by an acute psychosis with delusions and hallucinations.

Occasionally *subacute combined degeneration of the cord*, if running a very rapid course, is accompanied by mental symptoms, confusion, depression. I saw a case of this nature recently which had been provisionally regarded as functional, owing to her mental confusion accompanied by somewhat indefinite signs. The disease developed rapidly, however, and when I examined her she showed the typical signs, with jaundice. Three weeks later the findings were confirmed at autopsy.

Objective Appearances.

Quick appreciation of the outward details of a patient's appearance and manner is essential to the neurologist, since the diseases with which he has to deal are usually much more objective than diseases of other systems of the body. An accurate diagnosis is often revealed at a glance to the trained eye, and only confirmed or perhaps modified by the detailed physical examination which follows. A waitress was dismissed from her employment for becoming slow, her leisurely movements exasperating her employer. This poor woman had had an attack of so-called influenza six months before. On being questioned she admitted having had double vision at the time, but had thought nothing of it. What brought her to hospital was the recent onset of involuntary tremors in the right hand. In appearance she was an obvious case of post-encephalitic Parkinsonian syndrome, of hemiplegic distribution. Examination confirmed this diagnosis, and the slowness of gait and action that her employer complained of was due to the muscular rigidity consequent upon this disease.

Frequently after an attack of encephalitis lethargica the first thing that obtrudes itself into the patient's consciousness is that she is getting slow; slow in walking, slow in performing any customary act, and she is slow also in attributing her condition to any possible illness. A milder attack of the disease may leave even less trace. A detailed history and minute observation of very slight changes in muscle tone, in gait, in the lines and mobility of facial expression, may decide the diagnosis and save the patient from being labelled functional. In the absence of any indicative history in a middle-aged person such findings would suggest the idiopathic type of paralysis agitans.

Other objective signs of which the patient is unaware are weakness of the emotional movements of one side of the face, while the voluntary contraction remains unaffected. This is usually an early sign in tumours of the temporal lobe, is of great localising value, and is most apparent when the patient is chatting. The commencing enlargement of the nose, and bones of the jaw, and of the extremities in pituitary hypersecretion is obvious to the observer, though insidious enough to be unnoticed by the patient or his friends.

J. P. Martin points out that luxuriant iron-grey hair without trace of baldness in a man of middle age, the subject of some nervous lesion, suggests neurosyphilis. A glance should note myosis, inequality of pupils; the toxic colour and lack of expression together with the slightly inquiring eyebrows of the tabetic. This lack of expression, due to loss of tone in the facial muscles, is quite characteristic and cannot be confounded with that of the Parkinsonian, in whom it arises from hypertonus and loss of mobility.

Subjective Symptoms.

Subjective symptoms are very important in early nervous disease. These sensations frequently precede the appearance of a paresis or sensory loss, and may be misconstrued. When one thinks of the intricacies of motor coördination that are performed by means of the pyramidal tract, for instance, it is clear that clinical tests can only disclose crude defects. The first sign of the impairment of some skilled acquired movement can be apparent to the patient alone. A man with a slow-growing endothelioma of the left frontal and rolandic areas was aware that his writing had deteriorated, whereas at the time the physical examination was negative. In F. M. R. Walshe's series of cases of polyneuritis following upon diphtheritic infection of wounds, the patients in many cases were already aware of fatigue of the legs and aching of the calf muscles on exertion with painful cramps at night, when clinically only tenderness of these muscles could be found. Such symptoms may precede by weeks the disappearance of the tendon-jerks; indeed, the latter undergo a preliminary exaltation. In cases of polyneuritis and frequently in tabes and subacute combined, the ankle-jerks disappear before the knee-jerks. I would therefore emphasise the desirability of adding the ankle-jerk to the routine neurological examination of any case. I would also like to interpolate here a plea for more precision on the part of the medical profession in general in the use of the term "neuritis." Any vague and intractable pain is called neuritis, usually as a cloak of ignorance and a placebo to the patient, who is immediately proud to think she is suffering from something so high-sounding and at the same time she knows, from the discussions of her friends, that she need not expect a rapid cure. Fibrositis is a longer word, can be uttered with due significance, and is at least more likely to be accurate. The term "neuritis" should be reserved for interstitial neuritis, such as brachial neuritis, sciatica, &c. Diphtheritic polyneuritis would be more correctly termed "neuronitis" as the whole neurone including its spinal cord termination is involved.

Pain.—When patients complain of pain, the nature of the pain, its duration, and its localisation is important. Farquhar Buzzard maintains that an accurate description of lightning pains is diagnostic. He says the pains are a sharp stab at right angles to the limb in which they occur, and they may be present for months or years before the onset of any of the physical signs of tabes. In spinal tumours again the nature of the pain felt is suggestive of the diagnosis. There is almost invariably a definite thermal element in addition to the constricting element; that is, they feel a band round the affected part which is "burning hot," usually, sometimes cold, or both hot and cold. Fixed intractable pains of central spinal origin occur in disseminated sclerosis, in syringomyelia, and in other cord lesions. It is necessary to differentiate pain from an organic source from sensations of neurasthenic origin. These latter are usually described as pains, but questioning will elicit that they are rather unpleasant sensations than true pains.

Headache is an early symptom in many nervous diseases. Persistent severe headache, unyielding to treatment, in a young adult should suggest syphilis as the cause. A man who had been treated symptomatically for headache when young at the National Hospital returned ten years later a well-marked case of tabes. True headache must be differentiated by the history from neuralgia, and the cephalic sensations so common in neurasthenia and psychasthenia, and in women at the menopause. The "headache" in these cases proves to be not painful at all, but is a feeling of pressure, of fullness, a weight or a band round the head, &c. It is present on waking and improves as the day draws on, the reverse of what happens in the organic type. However, true paroxysmal headaches of a migrainous nature frequently do occur in women for the first time at the menopause. They may be accompanied by vomiting and coincide with the period of menstruation, and are probably due to a compensatory hyperplasia of the pituitary. In many of these cases the sella turcica is partially bridged over, which may interfere with the enlarging of the gland and so cause the symptoms.

Migraine should, of course, give rise to no confusion.

Sleep is frequently disturbed at the onset of many nervous illnesses. The man suffering from cerebral syphilis is drowsy by day, but mildly delirious by night. The man with a pituitary tumour yawns in your face, or falls asleep during your examination. Even those interesting cases of narcolepsy have almost certainly an organic basis. In these cases the pituitary fossa is abnormally small. A girl in the twenties complained that she was always falling asleep, but more especially when she laughed would sleep suddenly overcome her. She would "dog-nap," as she called it, over her work, and once she laughed when cycling, and immediately fell both asleep and off.

In the acute stages of encephalitis lethargica the patients may be almost impossible to rouse, or they may suffer from sleeplessness and restlessness by night, attaining in some instances to the wildest maniacal delirium.

Fits may be the first intimation of organic nervous disease of the brain. They occur as a first symptom in a definite number of cases of disseminated sclerosis when there is cortical or subcortical involvement. I have now a patient suffering from disseminated sclerosis who was quite well until she had a fit 11 years ago. After the fit she had diplopia and weakness of one limb, both of which cleared up. The diagnosis at that time was "nervous breakdown." I have seen several other cases of disseminated sclerosis who have had fits from time to time throughout the course of their disease. More frequently fits occur as an early symptom in intracranial tumour, and may precede the physical signs of tumour for many years. One boy had fits, apparently of a generalised epileptic nature, since the age of 15 years. These generalised fits became gradually interspersed with local seizures until these formed the majority and he rarely lost consciousness. He still had no physical signs that might not be attributed to the frequency of the fits, nor had he any papillœdema until just before he was operated on at the age of 25, when a huge endothelioma weighing about 200 g. was removed from his right frontal area. That interesting type of seizure, the temporo-sphenoidal fit, may occur in both idiopathic epilepsy and in organic intracranial lesions of this region, and in the case of tumours the attacks may precede by months the onset of any physical sign of tumour. These attacks are liable to be considered purely of psychological origin, so that a brief description of them here may not be out of place. The attacks consist of an olfactory aura, sometimes attended by a gustatory aura and followed by what is known as the dreamy state. The smell is usually nauseous, resembling that of burning feathers or organic matter, more rarely it is pleasant. In one case removal of a tumour resulted in the change of a pleasant to an unpleasant smell. I think the following description in the patient's own words is better than anything I can say. (The rather unusual style of the language is due to his being a Dane.) "I get a sort of feeling like a taste in my mouth. It is not exactly nasty, but it is not nice. I have a smell at the same time of similar nature. I then get a sensation as if I were living in a second or third world of life, when this other life happens I know it. I want to remember the occurrences in between (i.e., when normal), but I cannot. I usually hear a melody to start with; I know the melody at the time, but I cannot remember it afterwards. I often hear voices, men's and women's voices, who are not behaving haphazard; there is some point and sequence in what they are doing and saying. And I remember an old voice scolding and a little child's voice. I can see the people, and I know whether they are sympathetic or antipathetic to each other, and I know who they are during the attack, but after I cannot recollect."

Disturbances of Vision.

Sudden unilateral blindness is commonly a first sign of disseminated sclerosis. It may precede the general attack by as long as 20 years or more, but is often not mentioned unless inquired for. Again, a history of blindness may be given when what has actually occurred has been a complete ptosis. These patients seem unable to realise that they can still see. The ptosis may occur in hysteria, when it is usually bilateral, in neoplasm of the skull or brain, in syphilis, myasthenia gravis, and at the onset of encephalitis lethargica. A history of diplopia is highly significant. It is an early symptom in a large number of organic nervous diseases, and is comparatively rare in hysteria, where if there be multiplicity of vision it is more commonly a polyopia. The patient is conscious of diplopia when the causal ocular palsy is so slight as to be almost or quite impossible to detect by the gross methods at our service.

Conclusion.

I would like, in conclusion, to protest against that terminological abomination in diagnosis the "nervous breakdown." What is a nervous breakdown? In my personal experience among diseases thus diagnosed have been intracranial tumour, disseminated sclerosis, encephalitis lethargica, cerebral syphilis and neurisyphilis, paraplegia, cerebrovascular disease, psychosis, hysteria with or without paralyses, neurasthenia. What happens when nerves break down is Wallerian degeneration; but this physiological fact does not appear to be in the mind of the physician who makes this facile and meaningless diagnosis.

Two positive suggestions I would make are (1) that ophthalmoscopic examination of the fundus oculi should be part of the routine examination of every patient; (2) that lumbar punctures should be done in cases of suspected nervous disease. A properly carried out qualitative and cytological examination, including the Wassermann reaction, yields information upon which the diagnosis of the nature of the disease often rests and negative findings are of an almost equal value.

Two Lectures
ON THE
EFFICIENCY OF THE HEART AND ITS MEASUREMENT.

University of London Advanced Lectures in Physiology, delivered at University College, Nov. 30th and Dec. 1st, 1925,

By YANDELL HENDERSON,
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Lecture II.*—Applications and Results on Man.

The problem which we are considering is essentially that upon which the greatest of English physiologists made his supreme contribution. In this city (London) in the year 1628 William Harvey published the discovery of the circulation of the blood. Harvey solved the problem qualitatively. It is only now, 300 years later, that physiology has achieved its quantitative solution—the volume of blood that the heart pumps in a minute.

With the general problem now solved, the next step must be the application of measurements of the circulation to physiological study and clinical use. But it is only against a background of the principles of respiratory metabolism, and the mechanical conditions of the circulation, as set forth in the preceding lecture, that we can properly appreciate the significance of the data that are now becoming available from investigations on man himself, the best of all subjects for physiological study.

Failure of Physical Methods.

All mechanical methods of measuring the volume of the circulation have failed. When we learned, about 20 years ago, to measure arterial pressure on man, it was thought that perhaps the amplitude of the pulse—that is, the pulse pressure—would be proportional to the stroke volume of the heart. If so, the product of the pulse pressure and the pulse-rate for different times and conditions would indicate the relative volume of the circulation. But the elasticity and capacity of the arterial system are too variable for any reliance to be placed on this method.

Another line which I tried to develop depends on the recoil of the entire body under the impulse imparted to it by the discharge of blood from the heart at each beat. This device would be analogous to determining the weight and velocity of a cannon ball by measuring the extent to which the cannon recoils when the ball is fired out of it. You may see the principle the next time you weigh yourself on a spring balance. After you have dropped your penny in the slot, stand quite still and, if the machine is delicately adjusted, you will see the pointer over the dial vibrating with each stroke of the heart. If you have been exercising it will vibrate more widely. But no very practical results have as yet developed.

Success of Method Based on Metabolism.

For the beginning of a real solution of the problem we are indebted to the physiologist Fick. Some 40 or 50 years ago he laid down the principle upon which the greater part of what was said in my first lecture is based. It is that we can calculate the circulation from a determination of the amount of oxygen a man or animal is consuming a minute, and from analyses of the gases contained in the arterial blood and in venous blood from the right heart. The oxygen consumption of the body divided by the arterio-venous oxygen difference gives a quotient which is the volume of the circulation. Thus, for example, if the arterio-venous oxygen difference is 5 volumes per cent. and the volume of oxygen absorbed in a minute is 500 c.cm., the volume of the circulation must be 10,000 c.cm. or 10 litres, because 500 c.cm. is 5 per cent. of 10 litres, that is, $500/0{\cdot}05 = 10{,}000$. The same simple calculation can be applied in order to measure the circulation on the basis of the volume of carbon dioxide exhaled and the arterio-venous carbon dioxide difference.

Zuntz and Hagemann,[1] in their classical investigations on the metabolism and energetics of the horse, first tried to put this principle into practice. Much of the procedure was then new and complicated, and it is not surprising that their results were not very concordant one with another. It is amusing to recall a controversy between Zuntz and Bohr over the results, a controversy which still has a certain significance. Bohr believed that a considerable amount of combustion, at least during muscular work, occurs in the lungs. He argued that the volume of the circulation found by Zuntz would be insufficient to transport to the tissues the oxygen consumed by the animal. If oxygen were consumed in the lungs the Fick principle would not be valid. Conversely, if the circulation is actually smaller during hard work than the Fick procedure shows it, then oxygen is consumed in the lungs, as Bohr believed. In reality, as nearly as we can now figure from the results obtained by Zuntz and Hagemann, although the arterio-venous oxygen differences during rest were certainly much too high, the stroke index of a horse amounts to about 2 c.cm. per kilo per beat—a figure quite close to that which we now know to be correct for all vigorous mammals, large and small.

In the 27 years since Zuntz demonstrated the feasibility of the Fick principle great technical advances have been made, so that analyses which were then difficult and inaccurate are now comparatively easy and exact. We have learnt better how to determine the respiratory gaseous exchange on men and animals; and many investigators can now insert a needle into an artery even of a man and can draw a sample of arterial blood for analysis. From animals it is a simple, painless, and generally harmless operation to draw blood directly from the right heart also by means of a hypodermic syringe inserted through the body wall. As regards the results from animals obtained by many investigators recently, it suffices to say that during rest, probably not very complete rest, the arterio-venous oxygen difference found is usually 4 or 5 volumes per cent. and sometimes as low as 3 volumes per cent. Such figures combined with the oxygen consumption and the body-weights of the subjects (dogs) calculate out to stroke indices of about 1·3 to 1·8 c.cm. per kilo per beat. These figures are for the normal, unanæsthetised, unoperated, healthy animal. But as a rule, under anæsthesia, and especially under operation or experiment, the stroke volume and circulation are decreased far below normal. The arterio-venous oxygen difference rises, therefore, far above normal. Such a depression of the circulation gradually develops towards tissue asphyxia and death.

Application of the Fick Principle on Man.

On man cardiac puncture is not done, and even the withdrawal of blood from an artery is often a rather troublesome operation. Accordingly, much time and effort have been devoted by many investigators in recent years to developing what we may call respiratory procedures to afford similar data. An essential step was the discovery by Haldane and Priestley in 1905 that by making a sudden very deep expiration through a tube we can obtain in the tube, and can draw off for use, a sample of air from the depths of the lungs; and that this alveolar air is in gaseous equilibrium with the arterial blood. Plesch (1909) gave us the first indication as to how we may obtain air from the lungs which would be virtually in gaseous equilibrium with the venous blood.

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* Lecture I. appeared in the last issue of The Lancet.

[1] For references to literature see note at the end of this lecture.

The simplest procedure developed from this idea is to put into a rubber bag 2 or 3 litres of air, or much better oxygen, containing an amount of carbon dioxide between 5 and 6 per cent. After an initial deep expiration to empty the lungs as far as possible, the contents of the bag are inhaled and blown back into the bag three or four times in 10 seconds. The gas mixture is analysed for its percentage of carbon dioxide; then it is again inhaled for 20 seconds this time and analysed; and again inhaled for 30 seconds and analysed. If these three analyses show the same percentage of carbon dioxide, this agreement indicates that the amount of carbon dioxide in the bag is in equilibrium with that in the venous blood coming to the lungs, after that blood is fully oxygenated, but without at the same time either gaining or losing carbon dioxide.

Such air we call "virtual venous pulmonary air," and the difference between the pressure of carbon dioxide in it and that in "arterial pulmonary air" obtained by the procedure of Haldane and Priestley, gives the datum that we need. It is usually a little more than 1 per cent. of an atmosphere for a normal man at rest. In order to put this quantity into terms of volumes per cent. of arterio-venous difference we must multiply it by a factor for the capacity of the blood to absorb carbon dioxide. This factor is the amount of carbon dioxide that blood will take up and give off for each change of 1 mm. of pressure, or 1 per cent. of an atmosphere, of carbon dioxide. It is obtained from the well-known carbon dioxide dissociation curve of Christiansen, Douglas, and Haldane, and is 0·4 volumes per cent. for 1 mm., or 2·88 volumes per cent. for 1 per cent. of an atmosphere difference of pressure.

There are now available many observations by different investigators by means of methods of this general character. Some have employed more elaborate measures yielding venous pulmonary airs equilibrated in respect both to oxygen and carbon dioxide. Douglas and Haldane measured the circulation in this way on normal men and found in some vigorous persons that the stroke volume during rest is so large that, even up to a metabolism of ten times the basal rate, the oxygen requirements may be met wholly by the increased rapidity of the pulse and the increased percentage utilisation of oxygen from the blood. During exercise their data indicated that the stroke volume in Douglas was not appreciably increased. Both during rest and work his stroke index was 1·9 c.cm. His resting arterio-venous oxygen difference was only 3·2 volumes per cent., thus affording a very large reserve in the oxygen capacity of the blood.

The Stroke Volume of the Heart in Man.

If this is an accurate indication of the circulation in some vigorous persons, the behaviour of the heart is in accord with a theory which I advanced nearly 20 years ago covering two points: (1) that the stroke volume of the heart during rest is much larger, and the arterio-venous oxygen difference therefore much smaller, than had previously been supposed; and (2) that the stroke volume for all normal heart-rates for any vigorous individual during rest and exercise is a uniform or only slightly varying quantity. These propositions were based on observations and measurements of the volume curves of the hearts of dogs. As shown in Fig. 2 of the preceding lecture, the strokes have an amplitude of about 2 c.cm. per kilo of animal and have a sufficient interval of diastasis (the pause between beats) at slow pulse-rates, so that by an abbreviation of diastasis at more rapid rates a sufficient number of beats of unvarying size could be obtained to afford the largest circulation (as I then thought) needed during vigorous muscular exertion.

The first part of this theory has now been fully confirmed by observations on man, not only those of Douglas and Haldane, but also by similar and somewhat simpler methods by Meakins and Davies, by Henderson and Prince, by Barcroft, Roughton, and Shoji, by Robinson and Burwell, by Bock and his associates, and by a number of others. Thus we now know with a high degree of certainty and precision that the arterio-venous oxygen difference may be even below 4 volumes per cent. in a vigorous person during bodily rest. The stroke index during rest must therefore be 1·5 c.cm. per kilo per beat or more.

Until a few years ago the evidence available indicated that the arterio-venous oxygen difference was of the magnitude of 6 or 7 volumes per cent. From such figures, with those for the basal oxygen consumption at 250 c.cm. per minute, the conclusion followed by simple arithmetic that the circulation was only 3·5 to 4 litres a minute. A circulation of this volume with a pulse-rate of 70 a minute would make the stroke volume of the heart of a man at rest only 50 or 60 c.cm., a stroke index of only about 0·7. When the size of stroke was then calculated for the 10- or 15-fold increase of oxygen consumption during hard work, no conclusion was possible for Zuntz and the other investigators of those days, except that the strokes of the heart are several times as large during exercise as in rest.

We now know that the arterio-venous oxygen difference in a vigorous man or animal is only half as large, and therefore that the circulation during rest is twice as large, as they then supposed. For vigorous exercise we can figure that an athlete of 60 kilos consuming 3 litres of oxygen a minute, with his heart beating 180 times a minute, would just balance his oxygen account if his stroke volume were 100 c.cm. and his circulation, therefore, 18 litres. But there would then be very little oxygen left in his venous blood, less than 2 volumes per cent. The arterio-venous oxygen difference would be more than 16. If in such a man each stroke of the heart during exercise discharged the same volume as during bodily rest, that is the way the factors would balance.

Man is a very vigorous animal, and his vigour is largely based upon the factors of safety, or reserves, afforded by a low arterio-venous oxygen difference during rest and a correspondingly large stroke volume. It is wholly unnecessary and contrary to fact for such an organism, or mechanism, to have to increase the stroke volume 400 or 500 per cent. during muscular exercise as everyone believed only a few years ago. It seems probable that during all moderate activities about one's room or office or laboratory, with pulse-rates from 60 to 80 or 90, or possibly a little more, the circulation in vigorous individuals varies in proportion to the pulse-rate, and that the stroke volume of the heart is not appreciably increased. During more vigorous muscular work, however, I have come to doubt that this uniformity of stroke volume is maintained, and to regard it as probable that at a pulse-rate of 150 beats per minute, or 180 during an athletic contest, the stroke index may be increased to as much as 3 c.cm. per kilo per beat, or about double the stroke volume during rest. But it was only when a better method became available that this point was established.

On the whole, the results that have been derived from the application of the Fick principle to man are clear and important. But the method is really one solely for the laboratory, for research and instruction purposes. It requires special precautions and the coöperation of a trained subject; and even then the error of the method is 10 to 20 per cent. It becomes quite unreliable as soon as, owing to muscular activity or disease, the capacity of the blood to absorb and transport gases is altered.

The Nitrous Oxide Method.

Accordingly, Krogh and Lindhard attempted some years ago to develop a method based on the rate at which nitrous oxide is absorbed into the blood, when it is inhaled with air somewhat as in the procedure of Plesch above described. This method, in the form in which its inventors describe and use it, is not only more difficult, but far less accurate than the application of the Fick principle. Many other investigators have tried to use the method of Krogh and Lindhard, but all have given it up. Its results are often widely discordant, not only with the now known volume of the circulation, but also with each other. In successive determinations on the same subject under uniform conditions, the results are often twice as large in one as in the next, instead of nearly identical as they should be. Krogh and Lindhard regard these variations as indicating the variable volume of the circulation, but they are in reality errors inherent in the method. It was considered by Krogh and Lindhard to be necessary that the whole procedure or inhaling and exhaling the gas mixture should be completed in a time (30 or 40 seconds) less than that in which some of the blood makes the round of the circulation and returns to the lungs again. They argued that after this period, not only would nitrous oxide be going into the arterial blood from the air in the lungs, but some of the gas would be returning to the lungs in the venous blood. In fact, however, so brief a period renders it impossible to attain complete mixture of the inhaled gas with the air in the lungs and accurate determinations of the concentrations of the gas at the beginning and end of the period.

In spite of the failure of their method, physiology is greatly indebted to Krogh and Lindhard for this first gallant attempt to use a foreign gas as the means of measuring the circulation. To a certain extent my own recent investigations take their origin from it; for noting its defects I determined to use much longer periods of inhalation, to use a gas which could be more easily analysed, and to try to work out a correction (which has by good fortune proved unnecessary) for the amount brought back to the lungs by the venous blood.

PRINCIPLES CONTROLLING THE ABSORPTION OF GASES.

Consequently, I have now to describe a method, recently developed by my associate Dr. H. W. Haggard and myself, which seems, on the basis of the rather extensive data already available, to afford a simple, accurate, and almost universally applicable solution of the problem of measuring the circulation in man. For more than 20 years I have been searching for such a method. I had reached the point that I never expected to find it, and an equally fixed determination never to cease searching. The discovery was the result of a bit of good luck happening in the course of a systematic search.

In my laboratory we have been for some years past studying the action on man of all the varieties of gases and vapours which occur in modern industry, and which we all inhale (from motor-cars, coal smoke, illuminating gas, &c.) to some extent. Haggard had also made a very thorough study of the absorption and elimination of ethyl ether in connexion with anæsthesia. Out of these studies we had developed certain principles governing the absorption and elimination of volatile substances through the lungs, and particularly some mathematical formulæ, from which a number of important considerations became evident. All of the considerations thus derived proved on experimental test to be sound and practical. I have discussed them and have given the formulæ quite fully in some lectures [2] on anæsthesia and related matters recently. So only a few of the formulæ need be repeated now. The quantities considered and their symbols are as follows:—

(L) Effective pulmonary ventilation in litres per minute, that is, respiration minus the volume of air which merely enters the dead space.

(C) Concentration of the gas in milligrammes per litre of inspired air, when warmed to body temperature and saturated with moisture, as it is in the lungs.

(K) Coefficient of distribution of the gas between equal volumes of lung air and pulmonary blood.

(G) Litres or kilos of blood in active circulation in the body. In other words, the effective blood volume at the time.

(B) Circulation, defined as the number of litres or kilos of blood flowing through the lungs in one minute.

(W) Body-weight in kilos.

By combining these quantities we obtain the following formulæ:—

(1) LC = the amount of the gas inhaled into the lungs per minute.

(2) $LC \times \frac{L}{BK + L}$ = amount of the gas again exhaled from the lungs per minute.

(3) $LC \times \frac{BK}{BK + L}$ = amount of the gas absorbed per minute into the blood, before any of the blood completes the round of the circulation and returns to the lungs from the venous side; that is, the initial rate of absorption.

(4) $\frac{LCK}{BK + L}$ = amount of gas in milligrammes absorbed per litre of blood flowing through the lungs.

(5) $\frac{LCKG}{BK + L}$ = amount of gas absorbed during the first complete circulation of the blood, which is accomplished in the time $\frac{G}{B}$, a period less than one minute even during bodily rest.

(6) $\frac{LCKG}{BK + L} \times \frac{G}{W}$ = the amount of the gas brought back to the lungs by the venous blood during the second round of the circulation.

In these formulæ, the solubility of the gas in the blood (usually nearly the same as its solubility in water and expressed by K) exercises a dominating influence. If we examine this influence as revealed in the formulæ, we find that the rate at which a quite soluble gas (with a high value of K) is absorbed into the body, is determined to a very large extent by the volume of breathing (L), and to a very small extent by the circulation (B). Gases and vapours of a high solubility are therefore quite unsuited to use for measuring the circulation. On the other hand, with gases and vapours for which the coefficient of solubility (K) is small, the rate of absorption from the air of the lungs into the blood is little affected by variations in breathing (L), but depends almost wholly on the blood flow through the lungs. With this principle to guide us, we undertook to make a systematic test of all organic gases and vapours of low solubility. This search might have kept us busy for years but for the chance which led us early to try the vapour of ethyl iodide.

THE ETHYL IODIDE METHOD OF MEASURING THE CIRCULATION.

Ethyl iodide is a liquid with an odour somewhat like chloroform. It is as volatile as alcohol; and the vapour, as we have determined, has a solubility, or coefficient of distribution between air and blood in the lungs, which is expressed by 2; that is, when the alveolar air contains a certain number of milligrammes, or fraction of a milligramme, per litre, the blood flowing from the lungs always contains twice this amount per litre.

Ethyl iodide vapour, even when only minute amounts are contained in the air, can be determined, as we have found, with ease and accuracy by the use of iodine pentoxide to liberate iodine. Determination of the amount of this iodine by titration with thiosulphate is one of the most accurate methods of analysis that chemistry affords. The vapour of ethyl iodide mixed with the inspired air is so dilute that an experiment involves the absorption into the body of an amount of iodine corresponding to only about 0·2 g. of sodium iodide. Most important of all is the fact, as we were fortunate enough to discover, that ethyl iodide is decomposed in the tissues, presumably into sodium iodide and alcohol. The amount of ethyl iodide returned to the lungs in the venous blood is therefore so small that no correction seems necessary on this account even when periods of inhalation of 10 to 20 minutes are used.

A few drops of liquid ethyl iodide are vaporised in about 100 litres of air, or correspondingly more for experiments on exercise and large volumes of breathing, in a large spirometer. The subject inhales this vapour and air through a rubber tube, mouthpiece, and valves, and the expired air passes through a mixing chamber. The technique is essentially like that for the determination of the basal metabolism. It is convenient to combine the two determinations. By a device attached to the mouthpiece, a sample of alveolar air is automatically collected. This sample and equal volumes of the inspired and expired air are analysed iodometrically as above indicated and the circulation is calculated by a simple arithmetical formula—viz., the volume of air breathed per minute (as measured on the spirometer) is multiplied by the difference in the amount of ethyl iodide in the inspired and expired air, and is divided by twice the amount found in the alveolar air. A complete determination takes 30 or 40 minutes, including the calculations. It requires no training or coöperation on the part of the subject. It is a method which seems to be as well suited to the clinic as to the laboratory. It has been subjected to every test and control that we could devise, both on men and on animals, to test its accuracy. Perhaps the best test of all is the concordance of results obtained by this method with each other. In successive tests on the same individual under the same conditions closely agreeing measurements are obtained.

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[2] To be published in the British Medical Journal and in the annual volume of the Dental Board of the United Kingdom.

SUMMARY OF RESULTS OBTAINED WITH THE ETHYL IODIDE METHOD.

Many data have already been collected by this method and more are accumulating rapidly. The persons examined range from athletes to patients with well-marked heart disease. The general aspects of the results obtained have been indicated already in the course of these lectures. Thus physical vigour is found to be correlated with a large capacity in the circulation to transport oxygen even during bodily rest and consequently by a low arterio-venous oxygen difference. The athlete in complete rest has a circulation so large in relation to his oxygen consumption that his venous blood contains only a few volumes per cent. less oxygen than the arterial. At the other end of the scale it is found that even the ambulant cardiac patient has a circulation so much slower than normal that the difference in the oxygen content of the arterial and venous blood, even during rest, may amount to 6 or 7 volumes per cent. He has about the volume of circulation that we used, not many years ago, to assume in healthy people.

The athlete is characterised by a heart which during bodily rest makes large beats at a slow rhythm. Thus his stroke index is 1·5 c.cm. or more per kilo per beat. With moderate activity there appears to be little increase in the size of stroke. The increased blood flow is afforded chiefly by the acceleration of the pulse. With increased muscular exertion the stroke volume also increases, so that an athlete whose stroke index at rest (sitting) may be 1·5 c.cm. per kilo per beat, increases to double this volume during vigorous exertion. The total circulation, which is 5 to 7 litres per minute during rest, rises above 20 litres a minute during vigorous exercise, and may even exceed 30 litres (8 gallons) a minute in an athlete of the type that rows in a university crew and during a closely contested race. At the same time, as we have found in collateral investigations, such an athlete is doing an amount of work with his oar amounting to 0·6 horse-power. He is breathing 80 litres of air a minute and consuming between 3 and 4 litres of oxygen per minute. At such intensities of effort as these, and in fact above about 2 litres of oxygen, the reserve chiefly drawn on is the oxygen-holding capacity of the blood, so that the blood may have had more than half of its oxygen absorbed as it rushes through the tissues. When the circulation encroaches on the lower third of this reserve the athlete comes to the end of his physical power.

Observations have been made on a number of women ranging from athletic young girls up to women in middle life. During rest or moderate exertion their circulation is in every way comparable to that of men of corresponding weight, muscular development, and manner of life. For both men and women a sedentary life and overweight show their effects in a smaller stroke index of the heart and more rapid pulse even during rest. The most striking result of these investigations on the circulation in man has been the demonstration of the extraordinary difference between the volume of the circulation when the individual is lying down or standing. This difference in many persons who on every other score would be adjudged healthy may be as much as 40, and in some even 50, per cent. In comparatively few persons it is less than 20 per cent. Thus the circulation may be 8 or 9 litres a minute when the individual is at rest in bed and only 5 or 6 litres a minute after he has been standing quite still for some time. The effect of position on the circulation in animals was studied some 20 years ago by Leonard Hill, and these results on men are entirely in accord with those which he obtained on animals. It should be added that this effect on men was first observed by Bock and Field, whose work has not yet been published, but who called my attention to this important matter. It explains why rest in bed plays so great a part in recovering from fatigue. It affords the strongest evidence that in no occupation should a man, woman, or child be kept standing in one spot and still for more than a very brief period.

Finally, mention may be made of the effect of hot baths on the circulation as revealed in these investigations. As compared with rest in an ordinary temperature, a hot bath increases the volume of the circulation so much that the arterio-venous oxygen difference falls to a lower figure than under any other conditions. Thus it appears that a hot bath involves an intensive hyper-oxygenation of the tissues of the body.

CONCLUSIONS.

Now at last we know with precision the stroke volume of the heart and the volume of the circulation. We know the range of variation in normal men and women, and in general in all mammals. On the basis of such data the activity of the heart and the volume of the blood-stream are here correlated quantitatively with the size, vigour, and gaseous exchange of men and animals during rest and muscular work. The principles underlying this correlation are formulated. The volume of the blood-stream through the lungs is determined from the rate of absorption of ethyl iodide vapour. This method affords an efficient and clinically practicable means of measuring the circulation, not only in normal persons, both those of athletic and those of sedentary habit, but also in patients with moderate cardiac impairment.

Thus the problem of measuring the volume of the blood-stream—the problem which was in effect defined by William Harvey when he discovered the circulation nearly 300 years ago—is now solved.

For bibliography, see Henderson: Physiological Reviews, 1923, iii., 166. For detailed data and tables of measurements, see Henderson and Haggard: American Journal of Physiology, 1925, lxxiii., 194.

YORKSHIRE APPEAL FOR CANCER RESEARCH.—The Yorkshire Council of the British Empire Cancer Campaign, at a recent meeting at Leeds General Infirmary, resolved to issue an appeal next month for £75,000 for research work in the county. The appeal is to follow a meeting of the Council on Jan. 18th. The hon. secretary of the Council reported that the county had been divided into 18 districts, and each district would have three or more representatives on the Council. It would probably cost about £5000 a year to run a cancer research laboratory on up-to-date lines. Sir Berkeley Moynihan said that the idea was to have a cancer research centre in Leeds, and they had every right to expect that work done there would be very fruitful. It was their desire to work in association with the University department of pathology. The University was prepared to offer substantial financial help for a limited period, and to appoint a professor as a member of the full-time University staff to be at the head of the department.

A CLINICAL STUDY OF THE DICK TEST.

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A PAPER was published in THE LANCET from the Edinburgh City Hospital in January of this year by Ker, McGarrity, and McCartney, giving details of their preliminary work with the Dick test.[1] The results obtained at that time were highly suggestive and warranted a continuation, the first essential being to try out a further series of filtrates with a view to finding a reliable toxin. I had been associated with Dr. Ker in testing with one or two of the toxins whose results were recorded in the former paper, and we continued our work with a batch of toxins, prepared as previously described by Dr. J. E. McCartney. We had experimented with five different toxins in addition to those reported on in the previous paper, when we lit on one that we thought was giving critical results, but we had only completed about 100 tests with it when I suffered the very severe reverse of the loss of my chief. Later on, however, I was able to continue the work, and this paper embodies the experience obtained in the carrying out of over 1400 Dick tests.

Variation in Results obtained with Different Filtrates.

It is obvious that the question of choice of toxin to be employed is one of the very highest importance, and a method of accurate standardisation is essential before the test can find its fullest application. The following gives some idea of the varying results obtained with different preparations, and I think it may be fairly inferred from them that the test is quantitative.

For descriptive purposes I have named the filtrates with which these comparative tests were made A and B. Toxin A was supplied me by Dr. R. A. O'Brien and is a product of an American strain of the hæmolytic streptococcus. Toxin B was made by Dr. McCartney from a strain of the organism isolated in the Edinburgh City Hospital. It wil be remembered that this toxin was obtained by growing hæmolytic streptococci isolated from scarlet fever throats in rabbit blood broth for five days, separating the organisms from the filtrate by centrifuging at high speed, and then passing it through a Berkefeld filter. The test dose in all the following experiments was 0·1 c.cm.

A series of 34 scarlet patients, whose day of illness ranged from the fourth to the twenty-ninth, were tested with different concentrations of Toxin B. In 1 in 1000 dilution there were 21 positives thrown up, whereas with 1 in 500 every one of the 34 was positive. Moreover, the negatives obtained with the 1 in 1000 dilution occurred in cases from their fifteenth day onward, with the exception of two in which negatives were obtained on the eleventh and thirteenth days.

Toxin A tried on a batch of 17 diphtheria patients in a dilution of 1 in 1000 gave 14 positives, but this was reduced to 12 when a dilution of 1 in 6000 was used. In 12 scarlet convalescents, however, each dilution showed the same number of positives—viz., 4.

It would also appear that different strains of scarlatinal hæmolytic streptococci produce toxins of varying potency. In a batch of 17 diphtheria patients mentioned above as giving 14 positives when Toxin A was used in a dilution of 1 in 1000, Toxin B in the same dilution gave only 9 positives. Also in the same series of 12 scarlets reported as giving 4 positives with Toxin A we only got 2 positives with a similar dilution, 1 in 1000 of Toxin B.

These examples could be multiplied. Our final choice lay with Toxin B (Toxin No. 1 of McCartney's series). It gave positive results with all the early scarlets in our initial trials, negatives in convalescent scarlets that we were satisfied had been typical cases clinically, and it seemed to be giving a fair proportion of positives in our diphtheria patients. The reaction itself was clear-cut, very few ambiguous or difficult readings being found—the reaction on one occasion being very easily read in a negro baby. Finally the organism was derived from the type of scarlet prevalent in our district. From evidence which is accumulating this would not appear to be a point of great importance, but in view of our knowledge at the time we thought it well to be on the safe side.

Criteria of a Satisfactory Toxin Preparation.

A point that will be uppermost in the minds of those who have become interested in this work and propose to investigate the test for themselves, is the question of the potency of the filtrates used in the test. This will apply especially to those who have experience in the Schick test, where the toxicity of the test-substance can be estimated with great precision. Since, unfortunately, up to the moment of writing, no laboratory method has been devised for the standardisation of the toxin preparation used in the Dick test (chiefly owing to the extraordinary and complete absence of response on the part of laboratory animals to the filtrates), it is essential that workers should have some criterion of a satisfactory toxin, and the optimum concentration in which that toxin is to be used. Although I am aware that I am treading on contentious ground, I would venture to suggest that each toxin should be tried out on the basis of its behaviour towards the disease itself. That at least gives us a starting-point. Different dilutions of a filtrate should be employed by those experienced in intradermal work, and that one selected for further exploitation which gives first, at least 95 per cent. of positives in early scarlets before the end of the fifth day, and secondly, at least 70 per cent. of negatives by the thirtieth day. As we have seen in a previous experiment, the use of a more powerful toxin simply increases the percentage of positives in the later stages of the disease. But we already know from our experience with blanching tests, and from the therapeutic application of convalescent sera, that by this time the immunity response has become considerable. It would be wise therefore to take this fact into consideration if we are to regard the Dick test as a measure of immunity to scarlet fever. It is not to be supposed that these figures should be rigidly adhered to. They are simply put forward as a suggested scheme for gauging an appropriate toxin, and the strength in which it should be used. For example, the negative percentage of 70 is, of course, a purely arbitrary one, and as our knowledge of the immunity process increases will require no doubt to be modified. As will be noted subsequently my percentage of negatives in the convalescent stages is much higher, but it seems safer to err on the side of using too strong a toxin than too weak, particularly if the toxin is to be employed later on as an indicator of immunity conferred by the injection of toxin.

It is obvious, of course, that the value of such observations must depend on the number of cases tested and the accuracy of technique. Undoubtedly the latter is a matter of first-class importance, for as we have seen, the doubling of the dose of toxin had a marked effect on the positive rate. Comparable results might be introduced unless very great care was exercised in the measurement of doses, by imperfections in syringes, and so on. The above procedure would limit the titration of filtrates to workers in fever hospitals willing to take the responsibility. In the present state of our knowledge I do not see what other course is open to us.

Method of Applying the Test and Observing the Reaction.

The filtrate was supplied in a dilution of 1 in 100 and kept in the ice-chest until required. On each occasion that a series of patients was to be tested I made up a 1 in 1000 dilution sufficient for the test. A similar quantity of the same dilution was made up to act as a control. This was inactivated by heating in the water-bath for one hour at 100° C., any loss that occurred in the process owing to evaporation being made good by the addition of sterile distilled water. These diluted filtrates, active and inactivated, were employed throughout in a test dose of 0·1 c.cm.

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[1] THE LANCET, 1925, i., 230.

Practically every series of individuals in whom the test was done consisted partly of scarlets, both early and late, and some other class of patient suffering from diphtheria, measles, whooping-cough, and a small number from chicken-pox. It was felt in this way that if the results in the scarlet patients were working out as they should, the results in the other class could be accepted as reliable. Readings were made of the reaction at intervals of 8 hours and 24 hours from the time of making the test. This was found necessary, as a number of cases that were definite positives at the eight hours reading had disappeared at the 24-hour interval, while it was also found that definite positives at the end of the 24 hours had been indefinite, or even quite absent, at the earlier reading. Generally, however, as most workers have already noted, the reaction was quite visible at the end of five or six hours, and in one case of a lady medical student who drew my attention to it, I saw a brilliant reaction at the end of an hour and a half standing out prominently from the surrounding exanthem. At the beginning of the work in a series of cases, 48-hour and 72-hour readings were also made, but it was decided that these were unnecessary, although it gave an opportunity of noting in a few cases pigmentation after the original brightness of the reaction had faded. I should also add in this connexion that I saw a case recently in a nurse where a reaction was quite definite in the test area and completely absent from the control area at the end of 48 hours. The routine readings were definitely negative at 8 and 24 hours, and she had given a history of having suffered from scarlet 15 years previously.

With regard to the reaction itself there is little to add to the former description given by Ker. Attention has been drawn to the occurrence of a "partial" positive by Okell and Parish,[2] by which is meant a reaction from half to a quarter as large as the usual size. Similar reactions were observed, especially in scarlets about the third week, and were noted as weak positives. In the tables given in this paper they have been included as positives, since in most cases in which this type of reaction occurred in scarlet when the test was repeated at a later date it was definitely negative. I believe, however, that such a result denotes a certain degree of immunity, as in one case in which such a reaction occurred the serum was secured for a Schultz-Charlton test, and produced a certain amount of blanching.

In my experience of the test, having been chiefly in children, pseudo-reactions have not been very common, and I cannot say that I have seen more than half a dozen, though on various occasions minor degrees of the phenomenon have appeared. It seems not unlikely the presence of pseudo-reactions depends on the nature of the protein present in the culture medium for preparing the toxin, which as used throughout this work was prepared from a rabbit blood broth, as previously described by McCartney.

Presence and Persistence of the Reaction in Scarlet Fever.

Table I. shows the results of 746 tests in scarlet patients, in many cases the test being made on the same patient at different stages of his illness. I have been able in this way to collect 110 cases who were tested on two, three, or even four occasions, and all of whom gave positives in the early stages, and later became negative. The percentage of 95·15 of positives in early scarlets is highly satisfactory, and the gradual diminution of these towards the thirty-fifth day is also striking.

Dealing with the large number of notifications of scarlet fever as we do in Edinburgh, allowance must be made for a certain small percentage error in diagnosis. That would account partially for the anomalous results at either end of the illness. But it must also be mentioned that not all the cases that were typical scarlets clinically developed a negative in convalescence. For instance, one case which was tested on the ninth and fifty-first days, and on two separate intervening occasions, remained consistently positive. On the other hand, special notes are available of two cases where consideration of the fact that positive Dick tests were obtained throughout the illness cast doubt on the diagnosis, inasmuch as it had been reported at the time of their appearance that the rashes were not convincing and desquamation not characteristic. Another experience of these persistent positive reactions is worth recording. During the time this work was in progress three cases were admitted to the wards notified as scarlet, but continued to show positive reactions. All developed definite attacks of scarlet while in the ward, and thereafter the reaction became negative. One of these, however, was a typical scarlet on admission, and I have not the least doubt that this was a true relapse. On reviewing the case notes of the other two the impression was obtained that there may have been room for doubt with regard to the original diagnosis.

TABLE I.—*Showing the Persistence of the Dick Reaction during Five-daily Periods of Scarlet Fever.*

Day of disease.	Total number of cases.	Positive.	Negative.	Percentage positive.
1–5	103	98	5	95·15
6–10	110	87	23	79·10
11–15	103	57	46	55·33
16–20	101	33	68	32·67
21–25	116	19	97	16·38
26–30	82	9	73	10·97
31–35	66	3	63	4·76
36–139*	65	4	61	6·15

* All others tested.

Fourteen cases came under my notice of patients taking scarlet fever whose reaction to the Dick test had been previously determined as positive. As an offset to this, one case of scarlet occurred in a patient whose reaction had been read as negative.

Incidence of Dick-positives in Individuals not Suffering from Scarlet Fever.

These tests were performed on patients in the diphtheria, measles, whooping-cough, and chicken-pox wards. The total number, 634, is perhaps small enough to generalise upon, but I must confess to a little disappointment with the findings, considering how well the toxin was working on the scarlet side, when I saw how the results worked out. (Table II.)

TABLE II.—*Showing Results of the Dick Test in 634 Individuals not Suffering from Scarlet Fever.*

Age period in years.	Total.	Positive.	Negative.	Positive percentage.	Positive percentage in diphtheria patients.
0–½	10	2	8	20	—
½–1	28	15	13	53·57	33·3
1–2	64	38	26	59·37	64·2
2–3	87	52	35	59·77	64·7
3–4	50	30	20	60	72
4–5	53	30	23	56·60	72·2
5–10	150	77	73	51·33	63·1
10–15	74	30	44	40·54	36·6
15–20	37	12	25	32·43	34·6
20–30	59	15	44	25·42	17·9
30–40	18	2	16	11·11	—
40–50	4	1	3	25	—
	634	304	330	47·95	—

It will be seen at once from the table that the percentage positive rate nowhere approaches that given by Zingher as the result of his investigations in New York.[3] He found as many as 70 per cent. in his most susceptible age-group, 1–2. Ker, McGarrity, and McCartney found their highest positive percentage rate, 67·8, in the 2–3 age-group. While my figures bear out the expectation that the highest percentages appear at the time when scarlet fever is most likely to occur, I had been hopeful of results more closely approximating to Zingher's. It should be borne in mind, however, that the total number of persons examined contains a large proportion of measles and whooping-cough patients, 285 out of 634, very nearly one-half of the total. These patients are recruited from the less well-to-do section of the population, and might be expected, as Zingher has already demonstrated, to contain a high proportion of non-susceptibles. I accordingly worked out the percentages in 349 diphtheria patients, and have included them in a separate column. They show a much higher incidence of positives, and indicate, what Ker concluded from his figures, that children take longer to acquire their immunity in this country, and also what those responsible for the conduct of fever hospitals are only too painfully aware of from time to time—namely, the very high susceptibility of these patients to scarlet fever.

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[2] THE LANCET, 1925, i., 712.

[3] Jour. Amer. Med. Assoc., 1924, lxxxiii., 432.

Included in Table II. are the reactions of persons giving a previous history of scarlet. These numbered 76, of whom 67 were found negative, a satisfactory percentage of 88·15.

Relationship between the Dick Test and the Schultz-Charlton Phenomenon.

It was anticipated that some interesting results might emerge from a comparison of the Dick test with the results of injecting the serum from the same patient intradermally into the rashes of acute scarlets. In all 27 sera were tested in this way, involving the performance of 54 Schultz-Charlton tests. Each serum was tested on two bright rashes in typical scarlets, the amount of serum used varying from 0·5 c.cm. to 1 c.cm. in each rash.

The first series of cases consisted of patients in the 4th, 7th, 21st, 28th (two cases), 36th, 57th days of disease, and one with a previous history of scarlet at a remote date. Serum from the first three cases mentioned, who were positive Dick reactors, failed to blanch the scarlet rashes on which they were tried, and though carefully watched for, especially in the first two cases, there was no appearance of the reaction described by Blake and Trask. These authors described a reaction, similar to that of the Dicks, produced in susceptibles by injecting intradermally serum obtained from early cases of scarlet fever. One of the 28th day cases, the 36th day case, and the patient with a previous history of scarlet gave negative Dick reactions, and their sera gave excellent extinction phenomena in all rashes. The 57th day case and the other 28th day patient, both typical scarlets clinically, were Dick positive, but their sera produced blanching in every case.

The next series of cases consisted of two groups of 9 patients in each, one group being negative, the other positive Dick reactors. All gave a history of not having suffered from scarlet. The sera from the negative reactors succeeded in all cases in blanching the rashes upon which they were tried; the sera from the positive reactors failed in every instance.

Finally a serum was tried from a case which had given a weak positive reaction. In both rashes in which it was tried blanching was produced.

Apart, therefore, from the two exceptions in the first series, a definite correlation was established between the Dick test and the Schultz-Charlton phenomenon. The surprising thing to me is that there were not more exceptions, because there can be no comparison between the delicacy of the tests. Assuming that by the Dick test we can estimate individual immunity to a specific hæmolytic streptococcal toxin, the amount of toxin used in the test is purely an arbitrary one, and it is reasonable to suppose that a person might give a positive reaction and yet his serum contain sufficient antibody in the comparatively large amount of serum employed in the Schultz-Charlton test to neutralise the toxin over the comparatively limited area affected by the intradermal injection.

Blanching Effects of Antitoxic Sera.

Dr. O'Brien was anxious that we should experiment with his antitoxic sera with a view to investigating their capacity for extinguishing scarlet rashes. In the experiments detailed below, only rashes varying from bright to brilliant were employed, none were later than the third day of disease, and the intradermal dose in every case 0·5 c.cm. in the skin of the pectoral region. Where neat serum was employed, the test was controlled with a scarlet serum known to produce blanching, and with normal horse serum. No higher dilutions than the ones mentioned were tried.

Serum A 4156 was used in three cases undiluted, on two in a dilution of 2 in 5, and in three in a dilution of 1 in 10. Blanching was produced in every instance. In a case of facial erysipelas in the early stages, with a well-marked spreading margin, 0·5 c.cm. of this serum was injected intradermally half an inch beyond the raised edge in two separate sites. In 16 hours the edge had passed over both injected areas, and the erysipelatous flush in the neighbourhood of the needle marks remained of the same intensity as the rest.

Serum A 4200 was tried in one case undiluted, and in two cases in a dilution of 1 in 200. In the former case and in one of the cases where a dilution of 1 in 200 was employed blanching was observed. In the other case, which had a brilliant rash of the "boiled lobster" type, no extinction appeared, and it is of interest to note that this patient gave a positive Dick reaction on his 9th day, which was negative on the 23rd day of his disease.

Serum A 4177 was tried undiluted on two cases, in a dilution of 1 in 50 in two cases, in 1 in 100 in two cases, and in 1 in 200 in four cases. In every instance blanching was observed.

In all cases in which the neat antitoxic serum was used the control convalescent scarlet serum produced blanching, while the normal horse serum produced no effect in the direction of blanching. In three instances, however, the horse serum caused irregular areas of blotchiness.

From time to time in experiments with the Schultz-Charlton test I have noted that with serums obtained from various patients the area and the depth of the blanching has shown a certain degree of variation. While this may be partly attributable to the differences in level at which the needle was introduced, there can be no overlooking the possibility of different immunity responses on the part of various individuals to the disease. In the above cases in which undiluted serum was used one could not fail to be struck by the fact that the blanching effect was more marked than that usually brought about by a convalescent serum.

In two cases, both when serum A 4156 undiluted was injected, there appeared areas of blotchiness at the periphery of the blanching, and also encroaching irregularly on the blanched area. In neither case was the extinction phenomenon masked by this appearance.

Effect of Antitoxic Serum in Neutralising Toxin.

This experiment was undertaken to determine the effect of mixing antitoxic serum with the filtrate used in the tests reported in this paper. Twelve diphtheritic patients were chosen who had given good positive reactions four days previously. The test mixture consisted of 0·5 c.cm. toxin (1 in 100), 3·5 c.cm. normal saline, and 1 c.cm. serum of A 4156. A control mixture was made up by adding 0·5 c.cm. toxin (1 in 100) to 3·5 c.cm. normal saline, heating for one hour at 100° C., and making up to the original bulk of 4 c.cm. by the addition of sterile distilled water. After cooling 1 c.cm. serum A 4156 was added. The test and control mixtures were allowed to stand at room temperature for ten hours before use. In this way the toxin was at its usual concentration of 1 in 1000, and the antitoxic serum in a dilution of 1 in 5.

Of the 12 children tested in this fashion eight gave straight negatives, two gave combined pseudo-negatives at the eight hours reading, and one a combined pseudo-negative at the 24 hours reading. The remaining case showed nothing at the eight hours reading, but at 24 hours a reaction was present in both test and control areas, the test reaction being slightly larger than the control. The net result was, therefore, that in 11 out of 12 cases this serum was able to prevent the toxin reacting.

Passive Immunity with Antitoxic Sera.

Having definitely assured myself that these sera could extinguish scarlet rashes, and of the capacity of one of them to neutralise the toxin I was employing in my routine testing, I next turned my attention to passive immunity experiments with two of these sera.

The first group consisted of eight patients who at some previous date had been found positive. This was confirmed by retesting and each received 5 c.cm. serum A 4200 intramuscularly. An interval of 24 hours was allowed to elapse and all were again tested. Two of the eight were found negative, the remainder positive. Retested at the end of four days all were positive, one of the previous negatives only showing a weak reaction however. Bearing in mind the failure of Ker to achieve a passive immunity with 5 c.cm. of convalescent serum I considered the possibility of my dosage being too small, and tried another batch of four Dick positive patients with an intramuscular injection of 10 c.cm. of the same serum. The 24-hour and the fourth day retests were all positive. Three other Dick positive patients were thereupon given 20 c.cm. intramuscularly. Two gave positive reactions at both 24-hour and 4th day retests, while the third was negative at the 24-hour and weakly positive at the 4th day retest.

Another serum, A 4177, was employed with better results. Following the same procedure with regard to the retesting of 14 cases previously giving positive reactions, I followed by injecting 10 c.cm. intramuscularly. At the 24 hours retest I found all except one were Dick negative, and this individual remained positive at intervals of four and eight days. At the 4th day retest 13 were still Dick negative ; at the 8th day retest four more positives reappeared, whilst two having been discharged from hospital, seven negatives were left. On the 11th day after receiving the serum three of these seven were now positive ; two had left hospital, leaving two negative. These negatives were not again retested till the 18th day, when both were found positive.

The above results are interesting in view of the failure of serum A 4200 and the comparative success of A 4177. Unfortunately only two blanching experiments were done with A 4200 in a dilution of 1 in 200, but it seems noteworthy that it should not have succeeded in one of two cases, whereas the more successful serum A 4177 should have been able to extinguish all of four scarlet rashes in the same dilution.

Conclusions.

1. In performing the Dick test the choice of toxin is a matter of great importance, and careful preliminary trials are necessary before embarking on testing on a large scale. From variations in the number of positive reactions obtained by the use of filtrates from different strains of organisms, and by the same filtrates in different dilutions, it is suggested that the reaction is quantitative. The particular toxin selected was employed in a dilution of 1 in 1000, the test dose being 0·1 c.cm. intradermally.

2. The reaction with the particular toxin employed required to be read on two separate occasions, intervals of 8 and 24 hours having been found the most suitable times.

3. Scarlets in the first five days of illness yielded a positive percentage of 95·15 per cent., whereas from the 31st to the 35th day of illness 4·76 were found positive. Between these two periods there was gradual declension in the positive percentage rate.

4. In 634 patients not suffering from scarlet the highest percentage positive rate was 60, obtained at the 3–4 age-period, the age-periods showing the next highest incidence being between 2–3, 1–2, and 4–5, in the order given, all these showing a percentage positive rate of between 55 and 60. In persons with a previous history of scarlet 88·15 per cent. were found negative. The Dick reaction had been previously determined in 15 patients who subsequently took scarlet, and of these 14 were positive, the other having been noted as a negative reactor.

5. A correlationship was established between the Dick test and the Schultz-Charlton phenomenon in 25 out of 27 cases.

6. Three antitoxic sera were tested with regard to their ability to extinguish scarlet rashes. One blanched in all cases in dilutions up to 1 in 10, another in all cases up to 1 in 200, while a third succeeded in one case when undiluted, and in one case in a dilution of 1 in 200, but failed in one case in a dilution of 1 in 200.

7. An antitoxic serum in a dilution of 1 in 5 was able to neutralise the action of the filtrate employed throughout these tests, as judged by its capacity to prevent the filtrate reproducing the reaction in 11 known positive reactors out of 12.

8. Passive immunity experiments were undertaken with two antitoxic sera. One practically failed in doses of 5 c.cm., 10 c.cm., and 20 c.cm. intramuscularly. The other succeeded in 10 c.cm. doses intramuscularly in producing a passive immunity lasting in 13 out of 14 cases up the 4th day, in seven cases up to the 8th day, and in two cases up to the 11th day.

I would like to place on record my appreciation of the help given by the resident and nursing staff of the City Hospital, Edinburgh, whose coöperation in a time of stress alone rendered this work possible. Also to Dr. McCartney for a never-failing supply of toxin, to Prof. T. J. Mackie for much helpful advice, and to Dr. O'Brien for his generosity in supplying various preparations.

THE DICK TEST AT A FEVER HOSPITAL.

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Scarlet fever is thought by many now to be a localised disease of the nasopharyngeal mucosa, due to a certain specific strain of hæmolytic streptococcus which produces a toxin locally which is absorbed into the blood-stream, giving rise to the constitutional symptoms and the erythematous rash.

Where secondary infection occurs it is due to the action of the toxin so formed and absorbed lowering the resistance, and thus making the patient an easy prey either for the hæmolytic streptococcus itself or for any of the other nasopharyngeal bacteriological inhabitants. Immunity to scarlet fever must be antitoxic mainly, and cases in which a secondary rash develops during the course of an attack might be explained by the fact that this specific antitoxic immunity had not been developed sufficiently or not at all, and instances of a second attack might be explained in a similar way. As one attack usually confers immunity it would appear that the immunity is mostly antitoxic in nature. In my opinion the comparative immunity shown by adults might be explained, on this hypothesis, by the fact that adults usually have a good antitoxic immunity to scarlet fever, as is evidenced by the fact that the constitutional disturbances resulting from an attack of this disease are usually less marked in adults than children.

The Dick Test for Susceptibility to Scarlet Fever.

Dick and Dick[1] first described an intracutaneous immunity test for scarlet fever, using a soluble toxic filtrate of an hæmolytic streptococcus obtained from cases of that disease. Various modifications in the manner of preparation of this toxin have been recommended. Through the kindness of Dr. Abraham Zingher, of the Department of Public Health, New York, U.S.A., I was supplied in September, 1924, with some of the toxin recommended by him. Zingher's method of preparing it is briefly as follows. Pneumococcus broth containing 5 per cent. citrated horse blood is inoculated with a 24-hour-old culture of the specific hæmolytic streptococcus. This is then incubated for five days and then removed from the incubator and 0·5 per cent. carbolic acid is added to the culture. The resulting precipitate is allowed to settle, and the supernatant fluid decanted and forms the toxin.

The Toxin.—The strength of toxin requisite for the skin test is estimated by comparing the relative results *re* its local action on the skin of a susceptible person in known dilutions. The diluent used is physiological normal saline solution. In the case of the particular toxin used by me the dilution was 1 in 1000. The toxin keeps well both diluted and undiluted, if kept in a cool, dark place, and I found it as potent after eight months as when fresh.

Control.—This is made by heating the toxin as prepared above in a water-bath for one and a half hours at 100° C., and then allowing it to cool.

Technique of the Test.—The skin on the anterior aspect of the middle third of both forearms is cleaned with ether soap and then with ether. 0·2 c.cm. of the diluted toxin is injected intracutaneously into the left forearm, and a similar amount of the diluted control into the right forearm. I used an "Agla" hypodermic syringe, and number 26 gauge rustless steel needles. When the injection has been made there appears immediately at the site of it a raised white weal, varying in diameter from 7 to 10 mm. in diameter. The openings of the cutaneous glands show as small depressions in this weal, and the latter disappears in five minutes or so. Readings of the test and control areas were taken in every case at 6, 12, 24, 48, and 72 hours from the time of injection.

Table I. gives the results of the Dick test on cases clinically diagnosed as scarlet fever at different stages of that disease. The figures show that the majority gave a negative reaction on and after the tenth day of scarlet fever; 190 cases were tested from the tenth day of illness onwards with the results shown in Table II.

TABLE I.

Duration of disease in days.	Number tested.	Percentage—	
		Positive.	Negative.
1 to 5	48	68·8	31·2
6 to 9	16	50·0	50·0
10 to 12	11	18·2	81·8
13 to 15	11	54·5	45·5
16 to 30	69	10·15	89·85
31 and over ..	99	7·07	92·93
Totals	254	24·8	75·2

TABLE II.

Stage of disease.	Total number positive.	Percentage positive.	Total number negative.	Percentage negative.
10 days and over ..	22	11·6	168	88·4

Many of the scarlet fever cases gave a positive reaction up to the tenth day of disease, after which the majority gave a negative reaction. In most of the positive cases during the first five days of the disease the reaction was distinct (+), and in a few cases a markedly positive one (++). After five days practically all cases gave a gradually less marked positive reaction till after the tenth day, when 88·4 per cent. gave a negative one. I noticed that in severe cases with marked rash and early and well-marked desquamation a negative reaction was developed sooner than in mild cases. One case gave a positive reaction on the nineteenth day of disease, and also again on retesting ten days later, although desquamating when tested, and admitted with a good scarlatiniform rash and mild symptoms to hospital. A similar case was noted on the twenty-fifth day of disease, the reaction remaining positive although desquamating. These two cases might be examples of persons who do not develop antitoxic immunity even though attacked by scarlet fever.

Sixty-five cases were retested one or more times later during convalescence, owing to the fact that there was either an element of doubt *re* original diagnosis or the Dick test when first applied was positive, and might become negative later on. Five cases gave a persistently positive reaction, and did not desquamate or show any complications suggestive of scarlet fever.

In Table III. a comparison is given of the results of the Dick test on 281 cases of scarlet fever as tested by Zingher[2] at the Willard Parker Hospital, New York, and 254 similar cases tested by the same toxin at Leicester Isolation Hospital. From this table it would appear that antitoxic immunity is developed more slowly in Leicester than in New York, but that in the end the former cases develop a greater percentage of immunes. This is possibly accounted for by the fact that well-marked cases are rare in Leicester, and the present type of case is mild and, therefore, it takes longer for it to develop sufficient antitoxin to become immune. I have already remarked on the earlier development of a negative reaction in well-marked cases with a good rash and early desquamation.

TABLE III.

Duration of disease.	Percentage Dick-positive, New York.	Percentage Dick-positive, Leicester.
1 to 5 days	98	68·8
6 days and over ..	20	14·56

Table IV. gives the results of the Dick test on normal persons not suffering from and without a previous history of scarlet fever. From this table it would appear that the greatest susceptibility is between the ages of 3 to 15 years.

TABLE IV.*

Age-group in years.	Number tested.	Dick-negative.	Dick-positive.	Percentage positive.
1 to 3	2	2	—	Nil
3 to 6	20	7	13	65·0
6 to 9	26	11	15	57·7
9 to 12	26	11	15	57·7
12 to 15	11	6	5	54·5
15 to 20	7	6	1	14·3
20 to 25	12	9	3	25·0
25 to 40	7	6	1	14·3
Totals	111	58	53	47·74

* This comprises 58 females and 53 males.

Zingher,[3] over a much larger number of cases in New York, gives the number Dick-positive for all ages as 34·4 per cent., whilst Ker[4] gives 51·5 per cent. for Edinburgh, Nesbit[5] gives 50 per cent. in Gary Schools, Indiana, U.S.A., and Okell[6] gives 74 per cent. for 100 medical students in London. The figures are expressed comparatively in Table V.

TABLE V.

Percentage Dick-positive in—				
Leicester.	New York (Zingher).	London (Okell).	Gary. Ind. (Nesbit).	Edinburgh (Ker).
47·74	34·4	74·0	50·0	51·5

Results of Dick Test on Cases of Diphtheria Undergoing Treatment.

I performed this test on 132 cases of diphtheria, composed as follows: faucial (diph.), 99; nasal and faucial (diph.), 19; nasal (diph.), 5; laryngeal (diph.), 3; faucial and laryngeal (diph.), 2; faucial carriers of diphtheria, 4.

Of this number three cases, all from one family, were suffering from well-marked scarlet fever and faucial diphtheria concurrently, and all three gave a negative reaction Seven of the cases had had scarlet fever previously and all gave a negative reaction. Amongst this group my personal experience of the test might be worth mentioning. Whilst carrying out these tests I was warded with faucial diphtheria, and, having had scarlet fever six years previously, I thought it would be interesting to see if at any period during my attack of diphtheria I would give a positive reaction. Although I tested myself on six different occasions I always gave a negative reaction to the test. I might add that I had on three occasions, previously to contracting diphtheria, performed the test on myself with a similar result. Four of the diphtheria cases were faucial carriers only, and all gave a negative reaction. One diphtheria case giving a negative Dick reaction had been detained in hospital 108 days for complications, when tested, and his throat condition was quite healthy. This case would presumably not be specially susceptible to scarlet fever, as it was well over the convalescent period of diphtheria. Allowing for the last three groups (comprising 12 cases) as not being specially susceptible to scarlet fever, or having had that disease previously, we get 120 cases of diphtheria remaining.

In Table VI. the results are given of the Dick test on 120 cases of clinical diphtheria (all without a previous history of scarlet fever).

TABLE VI.

Age-group in years.	Dick-negative.					Dick-positive.					Per cent. pos.
	F.	N. & F.	N.	F. & L.	L.	F.	N. & F.	N.	F. & L.	L.	
1 to 3	3	1	—	—	—	4	1	1	—	—	60·0
3 to 6	4	2	—	1	—	26	7	3	1	1	84·4
6 to 12	10	2	—	—	—	15	2	1	—	1	61·3
12 to 20	4	1	—	—	—	7	2	—	—	—	64·3
20 to 30	7	—	—	—	—	7	—	—	—	—	50·0
30 and over ..	6	—	—	—	—	—	—	—	—	—	Nil
Totals ..	34	6	0	1	0	59	12	5	1	2	65·8

F. = faucial. N. = nasal. L. = laryngeal.

Table VII. gives the result of the Dick test in diphtheria cases—all age-groups—as displayed by different types of that disease. From this table it will be noted (1) that the most susceptible age-group in diphtheria to scarlet fever is the period 3 to 6 years; (2) the age-group 20 years and upwards, at which there is usually a lessened susceptibility to scarlet fever in normal persons, is least affected by the incidence of diphtheria; (3) nasal as well as nasal and faucial cases would appear specially prone to scarlet fever; (4) the immunity conferred by a previous attack of scarlet fever holds good, even if one contracts diphtheria at a later date they would not appear again susceptible to scarlet fever; (5) the four faucial diphtheria carriers all gave a negative Dick reaction, but whether there is a common antitoxic immunity or not could not be said from such a small number of cases.

TABLE VII.

Region affected.	Number tested.	Dick-negative.	Dick-positive.	Percentage positive.
Faucial	93	34	59	63·4
Faucial and laryngeal	2	1	1	50·0
Nasal and faucial ..	18	6	12	66·6
Nasal	5	—	5	100
Laryngeal	2	—	2	100
Totals	120	41	79	65·8

Table VIII. gives the relative susceptibility to scarlet fever of normal persons and of diphtheria cases—in age-groups—as shown by the Dick test. From this table it would appear that there is a marked increase in susceptibility to scarlet fever shown by diphtheria cases as a whole, as well as at every age period.

TABLE VIII.

Age-group in years.	Percentage positive—		Percentage increase.
	Normal cases.	Diphtheria cases.	
1 to 3	Nil	60·0	60·0
3 to 6	65·0	84·4	19·4
6 to 12	57·7	61·3	3·6
12 to 20	33·3	64·3	31·0
20 and over ..	21·05	35·0	13·9
Totals	47·74	65·8	18·06

In Table IX. the Schick test for susceptibility to diphtheria was performed on 105 cases of scarlet fever undergoing treatment with the results shown. From the figures in Table IX., contrasted with those in Table VIII., one sees that there is an increased susceptibility to scarlet fever shown by diphtheria cases as a whole, as compared with that shown by scarlet fever cases to diphtheria; the percentage being 65·8 for diphtheria cases to scarlet fever; 58·09 for scarlet fever cases to diphtheria; 7·71 increase for all age-groups.

TABLE IX.

Age-group in years.	Number tested.	Schick-positive—	
		Number.	Percentage.
½ to 1	1	1	100
1 to 2	3	3	100
2 to 3	3	3	100
3 to 5	25	18	72·0
5 to 10	50	26	52·0
10 to 20	22	10	45·4
20 and over ..	1	0	Nil
Totals	105	61	58·09

General Observations on the Dick Test in Diphtheria Cases.

(1) The test appears to be as reliable an index of susceptibility to scarlet fever in these cases as in ordinary normal individuals, and in all cases with a previous history of scarlet fever a negative reaction was noted. (2) Both in normal persons and in cases suffering from diphtheria there is a very small percentage of positive reactors above the age of 20 years. (3) In four cases an antitoxin (diphtheria) serum rash developed at the same time as the Dick reaction was manifest. This did not interfere with the readings, and the former faded in all cases before the latter, leaving the reaction well marked. (4) The reaction seemed much better marked and defined from the surrounding normal skin area in diphtheria cases than it did in both normal and scarlet fever cases. (5) In 21 cases out of the number of diphtheria cases tested there was a well-marked positive reaction (+ +) = 17·5 per cent. of marked positives. (6) The number of pseudo reactions (both negative and positive) was less than in scarlet fever and normal cases.

Five cases of erysipelas were tested by the Dick reaction also. Of this number four were cases of the facial type and one of the leg. The latter case gave a positive reaction on the third day of illness, and a negative one when tested on the twenty-seventh day of illness. All the remaining four cases gave negative reactions. It might appear that there is some relationship between scarlet fever and erysipelas, but owing to insufficiency of clinical material it would be impossible to draw conclusions till a much larger number of cases had been tested. Clinically the two diseases have often appeared to me to be allied.

The Dick Test as an Aid to Diagnosis of Scarlet Fever.

(1) A positive reaction during the first ten days of illness, gradually getting less markedly positive from the fifth day, would be in favour of a diagnosis of scarlet fever—more especially so if the reaction became negative after the tenth day. (2) A positive reaction persisting after the tenth day of illness would be against the diagnosis of scarlet fever, as also would a markedly positive reaction after five days. (3) The results of the Dick test in normal people bears out the statistics as to the age-incidence of scarlet fever—e.g., a positive reaction during the first ten days of illness in a suspected case, aged 25 years or over, would be in favour of the diagnosis of scarlet fever.

In conclusion I would like to express my thanks to Dr. Zingher, and also to Dr. Okell, of the Wellcome Research Laboratories, Kent, for their kindness in forwarding me samples of Dick toxin for carrying out the tests. I found that the former's preparation gave better results with our cases, and all of this series were tested with it.

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SOME PROBLEMS CONNECTED WITH THE DICK TEST.*

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and

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We know from the results of recent work in England, which broadly agree with those obtained in America, that the Dick toxin with which we are working is specifically related to the scarlet fever prevalent here. In the first few days of the disease a suitable dilution of the toxin will give a high percentage of positive reactions; these same patients will during convalescence change their reaction from positive to negative; the toxin is neutralised by the serum of patients convalescent from scarlet fever, and the toxin, if given in sufficiently large doses to volunteers, will produce what is in some essential characteristics (temperature, vomiting, and rash) a miniature attack of scarlet fever. We know also that the serum of horses immunised with this toxin contains an antitoxin giving the specific Schultz-Charlton reaction. We may go further and say that the accumulating evidence leaves little doubt that, at least in certain severely toxic cases of the disease, the antitoxin has a definite therapeutic effect. There are, however, a great many points still unexplained, and it is by the close study of these that progress will be made.

It is necessary to avoid changes in toxin while doing experimental work; one must, therefore, have a large volume of liquid toxin available. Scarlet fever toxin is strikingly resistant to heat, and of a much higher order of stability than other well-known bacterial toxins. It is not known at present whether dried toxin, or toxin precipitated by one of the well recognised methods of precipitation, would be more stable than the liquid toxin. Presumably it would be.

The Question of Dilution.

We know fairly closely what are the most suitable dilutions of toxins for use. The question is an interesting one. As Park has pointed out: "If a toxin is a little too strong there will be too many positives; if it is too weak there is a possibility of having people who are susceptible pronounced as immune."

We commenced working with a dilution of 1/6000 of our large bulk of toxin, for with this dilution several of the laboratory staff gave clear positive reactions. Several physicians in fever hospitals have kindly compared the two dilutions 1/6000 and 1/1000. One worker found in the first week of scarlet fever 12 per cent. of positive reactions with dilution 1/6000, while a 1/1000 dilution gave 60 per cent. of positive reactions; for the second week the figures were 6 per cent. and 12 per cent. It is therefore evident that 1/1000 is the better strength to use when testing patients considered to be suffering from scarlet fever. It may, of course, not be the optimum.

Percentage of Positive Reactions.

Different observers, when testing patients admitted in the first two days of the disease, have obtained different percentages of positive reactions. Most workers give a percentage of from 66 to 100, while two clinicians, working with small groups of patients, obtained percentages as low as 22 and 42. Probably a close study of these differences would give information of value. The change from a positive to a negative response to a 1/1000 dilution of the toxin during the disease appears to occur in the average case about the fifth to the eighth day. One point of some interest is that amongst 673 reactions there were but 10 (1·5 per cent.) "pseudo and positive," and 25 (3·7 per cent.) "pseudo and negative." This low percentage we probably owe to the fact that Okell and Watson chose for the growth of the streptococcus ordinary digest medium containing no blood, and, from a study of the growth and metabolism curves, harvested the toxin at 18 hours.

With a 1/1000 dilution of toxin the percentage of positive reactors in different ward staffs varied from 7·5 in a large hospital (106 nurses) to 10 amongst 31 nurses and probationers. Evidently the great majority of nurses of long experience in scarlet fever wards are negative to the Dick test and non-susceptible to the disease. We do not know accurately what percentage of nurses in such wards would give a history of having contracted scarlet fever during their hospital life. It is probably fairly large, but many have no such history. Evidently, as in diphtheria, nurses (and others) may become immune through minute unrecognised infections with the scarlet fever organism. Nurses with positive reactions are generally newcomers. Two nurses in fever hospitals who gave a positive response to the test developed scarlet fever later. We would not be surprised to find that practically every nurse who has been several years in scarlet fever wards has either suffered from an attack of the disease during her hospital career or has already become immune from unrecognised infections either during or prior to life in the wards.

Significance of a Negative Response.

We know broadly that a negative response to the Dick test indicates a high degree of non-susceptibility, but we are not convinced that a positive, and particularly a "partial positive," reactor may not possess some immunity. It will be of great interest to ascertain how high the immunity represented by a negative reaction is. We have already reported that in one hospital, during a certain period, eight patients wrongly diagnosed as suffering from scarlet fever who gave a negative Dick reaction were admitted to the scarlet fever ward, but none developed the disease from ward infection, whereas of six positive reactors similarly admitted four developed the disease within a short period of admission to the ward. In another hospital a case of scarlet fever made its appearance amongst a group of 50 convalescents who were closely associated; 37 of these were "Dick-negative," none developed the disease, while of 13 who were "Dick-positive," six developed scarlet fever. On the other hand, we have notes of two instances in which patients were apparently negative to the Dick test when 1/1000 dilution of toxin was used, yet shortly afterwards developed an attack of what was considered to be typical scarlet fever. Such instances do not materially affect the main thesis; for the moment we simply place them on record.

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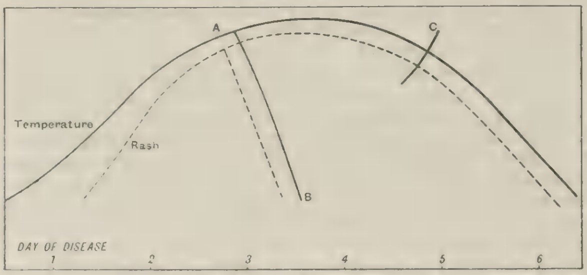
* A paper read at a meeting of the Fever Group, Society of Medical Officers of Health, Nov. 27th, 1925.

With regard to the application of the Dick test to diagnosis in the disease, it will be necessary to get a clear idea of the immunity curves of the disease. This will not be completely and satisfactorily done until one can as easily measure the toxin and antitoxin of scarlet fever in the laboratory as those of diphtheria. We have constructed a hypothetical curve which may well record what happens during an attack of scarlet fever.

In Curve 1 the heavy line diagrammatically records the temperature and toxæmia in an ordinary attack of scarlet fever, while the interrupted line records the development of the rash. Results recorded in England, as well as many observations from America, justify one in saying that if one gives at point A a sufficient dose of scarlet fever antitoxin produced in the horse, the temperature and rash will rapidly fall as at B, and the patient's serum will be found to contain sufficient antitoxin to give the Schultz-Charlton blanching in fresh cases of scarlet fever. We may therefore reasonably assume that at point C in an ordinary case of scarlet fever, untreated with antitoxin, the temperature and rash rapidly fall, because the patient has himself produced a large quantity of antitoxin which has been made in those cells of his body that manufacture antitoxin, and has there accumulated until it has been given off into the circulating blood to such an extent that the patient's serum will now give a Schultz-Charlton phenomenon when tested on a fresh patient.

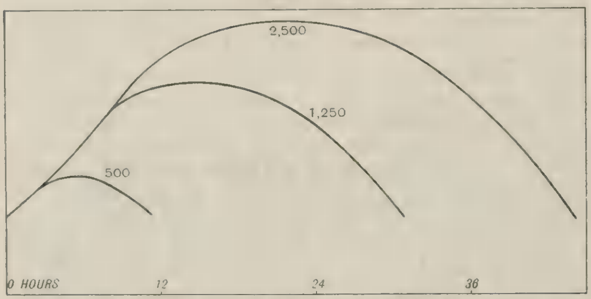
FIG. 1.



Scarlet fever.

Curve 2 represents observations made with our toxin. 500 skin reacting doses will produce either no temperature or a disturbance scarcely recognisable, and lasting only perhaps a few hours; 1250 doses will produce in some instances a miniature attack of scarlet fever—i.e., slight sickness, temperature, and rash, lasting 24 to 48 hours—while 2500 doses will produce in most instances vomiting, fever, and rash lasting about two days. We can from this get a quantitative idea of the *minimum* amount of toxin produced in an ordinary attack of scarlet fever.

FIG. 2.

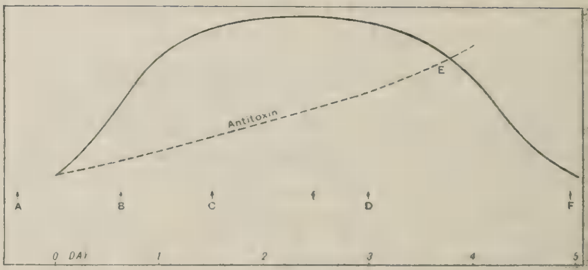


Miniature scarlet fever produced by toxin.

In Curve 3 we have represented what we conclude is occurring in an ordinary attack of scarlet fever. At point A—i.e., just before infection, or in the very earliest stage of the incubation of the disease before any symptoms have been produced—it is probable that weak toxin—e.g., 1/6000 dilution of our standard toxin—would yield a positive reaction. If we test again at point B the patient has begun to produce a minute amount of antitoxin in response to the toxin stimulation which has been going on for some 24 or 48 hours; we now find that the antitoxin is sufficient to neutralise a toxin dilution of 1/6000 but not 1/1000, for this latter dilution gives a positive reaction, while 1/6000 yields a negative. If we wait until point C we might find that the rapidly increasing antitoxin in the patient's blood or skin cells would neutralise a dilution of 1/1000 but not 1/200; at point D it might take 1/10 to produce a reaction; while at point E sufficient antitoxin has accumulated in the cells or blood to neutralise all the toxin secreted by the attacking organisms during the disease; and after point F the patient gives a permanent negative response.

We would suggest that attention should be concentrated on the study of the earliest period of the disease. If the patient is not admitted until the second or third day and gives a negative response to 1/1000 dilution, will he give a positive response to 1/500 or to 1/100? If when admitted on the second or third day he fails to give the Schultz-Charlton test when 0·2 c.cm. of 1/10 dilution of a good horse antitoxin is injected intracutaneously, will he give a positive Schultz-Charlton test when 0·5 c.cm. of 1/10 dilution is injected or even 0·5 c.cm. of undiluted horse antitoxin? (With this latter dose it would, of course, be necessary to use a control intradermic injection of undiluted horse serum containing no streptococcus antitoxin—e.g., diphtheria antitoxic serum.)

FIG. 3.



Scarlet fever.

Are There Different Types of Scarlet Fever?

Are all scarlet fever toxæmias due to the same toxin or are there different toxins in true scarlet fever—in other words, are there immunologically different types of the disease? One of us (C. C. O.) has long felt that there might easily be an overlapping of antigens beween the so-called true scarlet fever streptococcus and other streptococci, at least other hæmolytic streptococci. Recently a hæmolytic streptococcus, isolated by Sir Frederick Andrewes from a spreading lymphangitis of the arm, has yielded, when grown on the same media as the Dick and Dochez coccus, a filtrate which gives a typical positive Dick reaction in a known Dick-positive reactor, and a negative in a known Dick-negative reactor. We do not know yet if the toxin is neutralisable by true scarlet fever antitoxin. As yet the relationships between the various streptococci and their toxins have not been sufficiently investigated. This field is rich in interest.

Dr. C. Rundle has had the idea that there may be two or more types of scarlet fever, and has worked particularly by the Schultz-Charlton method. Furthermore, Dr. Park has in a recent paper suggested that there may be a wide antigenic overlap between the different streptococci, that—e.g., while the ordinary scarlet fever toxin contains antigenic or toxin components *a*, *b*, *c*, *d*, others may exist which contain *a*, *b*, *c*, *e*, and so forth.

It is stated that during convalescence after what seems to be typical scarlet fever a certain number of patients continue to give a positive Dick reaction. The point needs further investigation. If such patients exist, have they cured themselves of their fever by producing antitoxin which is still locked up intracellularly, and are the cells slow to excrete the antitoxin into the blood-stream? Will they become later negative to the Dick test? Have they responded to the primary stimulus of the toxæmia and, if injected with, e.g., 500 skin doses of toxin during convalescence, will they rapidly produce sufficient antitoxin to make them negative to the Dick test? These and many other interesting points can be worked out only by those having the opportunities of making clinical observations. In the laboratory, until a satisfactory test is discovered, we can do but little.

We may here mention an interesting question for investigation. How stable are the dilutions of toxin? We have considerable evidence that they are stable for at least two weeks. This is a small practical point, but one it is important to know in order to avoid fallacies in making a series of observations. It is obvious that the old and the new dilutions must be tested on the same subject.

THE HEPATIC ASPECT OF EPIDEMIC ENCEPHALITIS.

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THE association of hepatic cirrhosis with disease of the basal ganglia is well known, the outstanding example being found in Wilson's progressive lenticular degeneration. Other amyostatic syndromes, such as torsion dystonia, paralysis agitans, &c.—each presenting definite clinical features—are less clearly defined from the pathological standpoint, and it is doubtful to what extent, if any, hepatic derangement takes a part. Clinically, there is but little to suggest an insufficiency of the liver in the majority of instances—even in advanced cases of progressive lenticular degeneration. There are but scanty reports of chemical investigations as to the efficiency of the liver during life; the researches of Dresel and Levy on paralysis agitans and of Ivens on Wilson's disease suggest, however, that defective liver function does occur and can be demonstrated by laboratory methods, although absent clinically.

The object of the present investigation is to ascertain whether evidence exists, suggestive of hepatic involvement in the amyostatic manifestations of encephalitis. Most of the cases chosen have been examples of the Parkinsonian syndrome arising late in the course of a chronic progressive lethargic encephalitis.

Clinical Evidence of Hepatic Derangement.

It is rare to encounter, either during the acute or chronic manifestations of the disease, clinical evidence of hepatic derangement. Although continental writers have occasionally drawn attention to such phenomena, the experience of most English neurologists has been that encephalitis is rarely characterised by signs suggestive of liver involvement. Mlle. Lévy, however, in her recent monograph, states that she has observed jaundice several times in the course of the disease. Van Bogaert (1924) has recorded a case of post-encephalitic respiratory disorder in which jaundice appeared nine months after the onset of the illness, and persisted for a fortnight; there was no discoloration of the stools, but bile-salts were detected in the urine. Ottonello (1924) found signs of enlargement of the liver in eight out of 15 cases of Parkinsonism. Pedrinoni (1925) found clinically an increase in the hepatic dullness in several cases of chronic encephalitis; in one case the liver was apparently diminished in volume. Some ascites was found in one instance.

No clinical evidence was found in any of our cases to suggest a disordered function of the liver. We have never met with jaundice, ascites, pallor of the stools, or abnormal areas of hepatic dullness in any case, either during or after the acute attack.

Histological Evidence.

Unfortunately, there is but scanty reference in the literature of epidemic encephalitis to the post-mortem appearance of the liver. This fact alone suggests that an absence of gross naked-eye changes in that organ is the rule; the evidence of macroscopic cirrhosis is sufficiently striking at an autopsy to invite comment and more detailed examination.

Reports as to the microscopic structure of the liver in these cases are even rarer, and most of the records at our disposal are the work of Italian physicians. In one fatal case of epidemic encephalitis, in which the patient died three weeks after the onset, Ada Harris (1921) reported œdema, cloudy swelling, and fatty degeneration in the liver. The blood-vessels were engorged, a few of them showing perivascular hæmorrhages. There were areas of necrosis around some of the interlobular vessels. Pierantoni (1923) recorded an autopsy on a man of 29, dying in a state of Parkinsonism of three and a half years' duration. The liver was found to be markedly cirrhotic; there was no previous history of syphilis or alcoholism. D'Alessandro (1924) also found vascular stasis and incipient fatty degeneration in the liver of a fatal case of encephalitis.

Rizzo (1924) found in the liver of one case, which perished on the fifteenth day, patchy colliquative degeneration of the parenchyma. The blood-vessels were congested, and here and there were traces of fatty degeneration. No evidence of connective tissue reaction was observed. In two cases of Parkinsonism in chronic encephalitis, of two and a half and three years' duration respectively, he found definite histological changes. Patchy colliquative rarefaction of the parenchyma was observed; in one case there was some venous congestion. Both cases exhibited a definite connective tissue reaction of fibroblastic and fibrous character.

We have had the opportunity of examining the liver in two fatal cases of encephalitis.

Liver 1.—M. N., male, aged 56 (patient of Dr. Gordon Holmes).

(Very advanced case of Parkinsonism following encephalitis; acute onset three and a half years previously.)

Naked Eye.—The liver was normal in size and consistency, and of smooth surface.

Histological.—On microscopical section the capsule appeared slightly thickened. There was a little increase in fibrous tissue in the portal spaces and between the cells. This cirrhosis was universal except in the case of the intercellular increase, which was patchy in distribution and but slight in degree. Associated with this connective tissue proliferation there was a small round-cell infiltration of the portal spaces. No cells were present between the liver cells or around the blood-vessels. There was no dilatation of the ducts or canaliculi. The majority of the cells appeared healthy; in some there were fatty changes, the fat being present in large globules staining brick red with Scharlach R. The nuclei remained intact and were deeply stained. There was perhaps some diminution in the number of Küpffer cells, which in many places appeared flattened against the sinus walls. Bile-pigment was seen in the cells and ducts.

Liver 2.—L. B., male, 5½ years (patient of Dr. Wilfred Pearson).

(Acute onset of encephalitis 12 months before death. Patient gradually passed into a stage of chronic nocturnal chorea with diurnal lethargy; stiffness of legs; dysphagia; mouth gaping widely; marked respiratory arrhythmia. Gradual onset of unconsciousness with head retraction before death.)

Naked Eye.—The liver was normal in size, shape, colour, and consistency. No surface irregularity was present, and there was no thickening of the capsule.

Histological.—In this case there was little or no increase in the amount of fibrous tissue in the portal spaces, and no pericellular fibrosis whatever. There was no round-cell infiltration. The veins were slightly engorged ; the great majority of the liver cells were normal, but in some occasional traces of fatty degeneration were detected ; the fat was present in the form of very fine droplets, staining brick red with Scharlach R. No abnormality could be noted in the Küpffer cells.

These two livers afforded no evidence of impairment of any of the hepatic functions—secretory, excretory, glycogenic, or detoxicatory. The changes described are such as might be present in any fatal case of toxæmia, and there was nothing to suggest damage to any appreciable proportion of the liver cells.

Biochemical Evidence.

Various metabolic aspects of encephalitis have been studied, particularly by continental workers, who have concentrated upon the question of liver efficiency. In this country Ellis (1924) investigated the excretion of nitrogen and phosphorus in epidemic encephalitis. He found increased amounts of ammonia in the urine and an absence of phosphoric acid ; in many cases albumosuria was encountered. He considered these changes to be due to intestinal or more probably liver derangement. Meyer-Bisch and Stern (1923) found urobilinuria in each of 11 cases of progressive encephalitis. Ingestion of 100 g. of lævulose caused lævulosuria in five out of six patients, together with an increased output of urobilin. They do not believe that the probable lesion of the liver was caused by the central nervous process. Xavier (1923) carried out hepatic efficiency tests on ten cases of chronic encephalitis ; urobilinuria was present in one case. The Van den Bergh test was negative in each of five cases. Widal's hæmoclastic crisis gave a positive result in two patients, one of whom was advanced in pregnancy and the other had recently been treated with neo-salvarsan. The author concluded that there was no alteration in hepatic function.

Liver function has also been studied in 15 cases of Parkinsonism by Ottonello (1924). He found urobilinuria in six cases ; urea excretion was diminished in all 15 cases, but there was an increased urinary output of ammonia nitrogen. In ten cases the urine failed to contain glycuronates after the administration of sodium salicylate. Alimentary glycosuria occurred five times. Ottonello concluded that defective liver function was a constant feature of chronic encephalitis.

The blood-sugar in this disease has been studied by de Giacomo (1924), who found a hyperglycæmia in every one of his eight cases. Pedrinoni (1925) performed liver function tests in 16 cases of chronic encephalitis ; he found urobilinuria in 11, and in 10 cases uroerythrin was detected in the urine. The production of urea was below normal in all ; indicanuria was found in every patient. The glycogenic function was normal in nine out of 14 ; the hæmoclastic crisis test was carried out 64 times, always with a positive result ; the various components of the tests, however, were dissociated and incomplete. Halliday (1925) reports that in the acute stages of the disease the fasting level of the blood-sugar is normal ; in some cases, however, the blood-sugar curves after the ingestion of glucose indicated a delay in liver storage.

Results in our Series of 34 Cases.

Out of the very numerous tests that have been suggested as indications of hepatic efficiency we have chosen for this present investigation five—namely, examination of the urine for bile-salts and pigments, the hæmoclastic crisis test, Van den Bergh's reaction, the lævulose curve, and Roger's test (examination of urine for presence of glycuronates after an injection of 5 gr. of camphor).

Bile-salts and Pigments in Urine.—This investigation was carried out on 33 patients with uniformly negative results.

Hæmoclastic Crisis.—Twenty-five patients were submitted to Widal's hæmoclastic crisis test ; of these 12 gave a positive result. In nine of them the fall in the leucocyte count was 2000 or over. Eight patients gave equivocal results, and five were quite negative. In several patients a leucopenia was found at each examination ; thus, counts of 4400, 3533, and 1633 were found in F. G., R. F., and A. McG. respectively.

Van den Bergh's Reaction.—This test was carried out on 13 patients with completely negative results.

Table showing Results of Tests in Epidemic Encephalitis.

Name.	Sex and age.	Duration (months).	Clinical state. P. = Parkinsonism.	Urinary bile-salts.	Urinary bile-pigments.	Roger's test.	Hæmoclastic crisis.	Lævulose test. R. = rise F. = fall.
LJ.	F 32	12	P.	0	0	+	+‡	R., 0·05 in 60′
CMcG.	F 19	24	P.	0	0	+	±	R., 0·01 in 45′
AW.	F 23	24	P.	0	0	+		
FM.*	M 24	12	P. ; resp. disorder.	0	0	+	+	R., 0·02 in 30′
WC.	F 28	48	P.	0	0	+		
HH.	M 15	14	Slight P.	0	0	+	+	F., 0·02 in 30′
IT.	F 28	12	P.	0	0	+	0	R., 0·02 in 20′
WM.*	M 36	12	P.	0	0	+	0	R., 0·03 in 60′
ES.	M 19	13	Mild P. ; resp. disorder.	0	0	+	+	R., 0·04 in 30′
IC.	F 23	12	P. ; contractures ; resp. disorder.	0	0	+	+	R., 0·06 in 60′
RF.	F 42	36	P.	0	0	+	+	
WE.	M 14	10	Torsion spasm ; inverted sleep rhythm.	0	0	+	±	R., 0·02 in 30′
WR.	M 33	12	Severe P.	0	0	+		R., 0·02 in 30′
WW.	M 22	10	P.	0	0	+	±	F., 0·02 in 120′
CD.	M 30	12	P.	0	0	+	+	R., 0·01 in 20′
RF.	M 10	24	Moral change ; inverted sleep rhythm.	0	0	+	0	F., 0·01 in 30′
GW.	F 32	48	P.	0	0	+		R., 0·02 in 20′
JK.	F 24	36	P.	0	0	+	+	F., 0·02 in 40′
LS.*	M 22	13	P.	0	0	+	±	No change.
AS.	F 41	10	P.	0	0	0		R., 0·04 in 40′
FG.	M 22	9	P.				±	R., 0·06 in 30′
AJ.	M 41	12	P.	0	0	+	0	R., 0·05 in 60′
CM.	M 40	7	Mild P. ; chronic alcoholic.	0	0	+	±	R., 0·03 in 60′
LG.	F 26	12	P.	0	0	+	0	F., 0·02 in 30′
CP.	M 20	59	P. ; moral change.	0	0	+		R., 0·03 in 60′
EB.	F 16	13	Myoclonus ; resp. disorder.	0	0	+	±	R., 0·01 in 30′
TC.*	M 12	24	Mild P. ; dysarthria.	0	0	+		R., 0·02 in 60′
FG.	M 22	18	P.	0	0	+	+	No change.
DS.*	M 35	36	Severe P.	0	0	+	+	R., 0·05 in 30′
ME.*	F 34	36	P.	0	0	+	+	R., 0·01 in 30′
WP.*	M 42	24	P.	0	0	+	±	R., 0·01 in 30′
CL.*	M 17	36	P.	0	0	+	+	R., 0·02 in 30′
GS.*	M 40	15	Slight P.	0	0	+		R., 0·04 in 30′
GR.*	12 20	F	Severe P.	0	0	+		

* Van den Bergh : 0. ‡ Weakly.

The Lævulose Curve.—In 30 cases examined by this test, a resting blood-sugar level above 0·13 per cent. was found in all. In 21 cases the level lay between 0·14 per cent. and 0·18 per cent., and in two cases it lay higher than 0·2 per cent. The average reading for all the cases examined was 0·158 per cent.

After the administration of lævulose (25–35 g., according to patient's weight) a rise in the curve occurred in 23. The elevation varied in degree from 0·01 per cent. to 0·06 per cent. ; and in time of appearance from 20 minutes to one hour : three cases gave a rise of 0·04 per cent. ; three cases gave a rise of 0·05 per cent.; one case gave a rise of 0·06 per cent. In the others the rise lay between 0·01 per cent. and 0·03 per cent., which may probably be considered within normal limits. Owing to the variable kidney threshold for lævulose present in normal individuals, routine examinations for lævulosuria were not made. Two patients showed absolutely no change in the blood-sugar level after the ingestion of lævulose; in five others there was actually a fall of from 0·01 per cent. to 0·02 per cent., extending over a period of from 30 minutes to two hours.

Roger's Test.—In 32 cases glycuronic acid appeared in the urine after the administration of 5 gr. of camphor. In one case only was an abnormal reaction found, no glycuronates being detected by Tollen's reaction.

The value of these various tests is still disputed, and some of them—e.g., the pigmentary reactions—though genuine tests of hepatic function, are probably gross, a positive result indicating severe damage to the liver. It is possible that Roger's test and the lævulose curve are more delicate criteria of the slighter degrees of liver defect. The value of the hæmoclastic crisis test is still debatable, and there even is some evidence to suggest that it is worthless as a liver function test.

In our present series all the cruder pigmentary tests have been uniformly negative; of the more sensitive tests, such as Roger's, 32 out of 33 gave normal responses. The lævulose curves were, in 26 cases, within the limits of normality, although every one of the 33 cases examined had a high resting sugar. Seven cases showed a rise in the blood-sugar of from 0·04 per cent. to 0·06 per cent. The results in the hæmoclastic crisis test were certainly abnormal, but it must be pointed out that a leucopenia has been found in many of our control cases after the ingestion of milk, and hence no deductions are permissible from these results. It is worthy of note, moreover, that no parallelism could be traced between those cases showing elevation of the blood-sugar curve above 0·03 per cent. and those cases with a positive hæmoclastic crisis.

Discussion.

The subjects of these biochemical investigations have been patients exhibiting various sequelæ of epidemic encephalitis. Most of them were examples of Parkinsonism, but a few cases presented psychical changes without gross organic defects. The patients varied in age from 10 years to 42, and the intervals between the acute attack and the investigation ranged from seven months to five years. The accompanying table attempts to correlate clinical data with laboratory findings. The results of these investigations have broadly indicated: (1) that there is no biochemical evidence of any gross derangement in the functions of the liver, and (2) that in many cases the resting blood-sugar is increased.

The metabolism of glucose has attracted most attention in respect to its presence in the cerebrospinal fluid in increased amounts. Although by no means a constant feature, nor yet confined to encephalitis only, nevertheless a "hyperglycorrhacie" is well known to be a frequent and striking phenomenon in both acute and chronic encephalitis. The figures obtained have never been very high, and have also been lower than the blood-sugar readings. Little attention has been given to the estimation of glucose in the blood in this disease. De Giacomo (1925) investigated this point in eight cases of Parkinsonism following encephalitis, and obtained in each case a definitely high figure; in five cases of senile paralysis agitans there was but a slight hyperglycæmia, which was inconstant in appearance.

During the acute stages of the disease, high blood-sugar readings have been recorded by Bourges, Foerster, and Moncandier (1920), and by Talheimer and Updegraff (1922). Normal results, however, were obtained by Foster (1921) and by Halliday (1925). From the estimations in our series it appears that a slight but definite increase in the amount of glucose in the fasting blood is of frequent occurrence. Thus all of our 31 cases have presented a mild hyperglycæmia. The average resting blood-sugar percentage for all cases has been 0·158 per cent. as opposed in 0·12 per cent. in our controls.

In spite of the definitely high amount of sugar in the resting blood, a lævulose meal produces as a rule no rise. Periodic estimations of the blood-sugar level after the ingestion of 30 g. of glucose produced in the majority of cases but little rise in the figure; the curve, moreover, rapidly "flattened out," and did not exhibit any striking deviation from the curves obtained in control cases. The cerebro-spinal fluid glucose after the ingestion of sugar was not estimated as a routine measure, but in one case in which repeated lumbar punctures were made at the same time as the blood was taken the two curves were seen to run parallel courses.

Although one of us in a previous paper has called attention to the presence in the urine of a Fehling-reducing substance in many cases of chronic encephalitis, in no instance in the present series has any constant glycosuria been observed. Two hypotheses have been suggested to explain the alterations in glucose metabolism in this disease; on the one hand, it has been supposed that the encephalitic virus has damaged various secretory elements in the extraneural systems—in particular, the liver parenchyma. On the other hand, a derangement of the sympathetic system has been suspected. The present investigations fail to support any conception of a visceral origin for these changes. Thus our hepatic efficiency tests, though admittedly crude and of unproved value, do not suggest any obvious liver insufficiency. This has tallied with our clinical observations. Uranalysis, blood-pressure readings, and renal function tests, though not reported here, have not given evidence of any kidney derangement. We have found, moreover, a normal utilisation of glucose by the tissues, in spite of the elevation of the initial reading.

It appears, therefore, more reasonable to regard these metabolic changes as evidence of sympathetic involvement. It is improbable that an infection of the central nervous system, so diffuse in its activity, would spare the various sympathetic "centres" which probably lie in the diencephalon and along the base of the fourth ventricle and medulla oblongata. Clinical manifestations of altered sympathetic activity may be pointed out in such symptoms as seborrhœa, hyperhidrosis, and vasomotor derangements.

Conclusions.

We have been unable to find any clinical, histological, or biochemical evidence to suggest an hepatic involvement after epidemic encephalitis. The amount of sugar in the resting blood, however, tends to lie at a slightly higher level than normal; it is suggested that this hyperglycæmia is the result of sympathetic dysfunction.

We beg to express our gratitude to the physicians of the National Hospital, upon whose patients these investigations were carried out.

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THE AVOIDANCE OF PAIN AFTER TONSILLECTOMY.

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In the following article I have endeavoured to focus attention on one point only, the avoidance of pain after tonsillectomy. It may seem a comparatively small point, but in reality it is very important, especially from the patient's point of view. Everyone recognises that the unhealthy tonsil is one of the main portals for the entrance of infection, and one of the chief breeding grounds for micro-organisms. Complete removal of septic tonsils is recommended, with justification, for a great variety of pathological conditions, including enlarged glands of the neck, chronic rheumatism, anæmia, "neuritis," heart disease of toxic origin, chorea, epilepsy, persistent conjunctivitis, goitre, and many others. Septic tonsils in adults are more common than is often supposed, and are undoubtedly the cause of many obscure toxæmias; but if such a cause is to be discovered it must be looked for. The throat must be examined with two spatulas, one holding down the tongue, and a smaller one exerting steady pressure outwards and backwards on the anterior pillar of the fauces, causing the tonsil to emerge fully into view, and, when it is septic, squeezing pus out of it.

Many adult patients—and I find, nowadays, that in private practice, though not in hospital, I have to perform tonsillectomy more frequently for adults than for children—are inclined, however, to refuse operation on account of fear; they know of friends who were laid on their backs after the operation, in pain and unable to swallow, for ten days or more; or they expect to remain in a nursing home for a fortnight or longer, and cannot spare the time. It is therefore of great importance to be able to assure a patient that the operation can be performed painlessly, or practically so, and that he should be able to leave the nursing home quite well after three or four days. I admit that I have given this subject considerably more attention since I had my own tonsils enucleated, and have been able to realise personally the difference in comfort that attention to small and almost trivial details can make.

The question of whether a tonsil should be enucleated by the guillotine or by dissection may be considered from the same point of view. Dissection under a local anæsthetic is a method I have never employed; I have heard surgeons speak of it enthusiastically, but I have never yet known a patient do so. It may be painless at the time of operation, but it is certainly not so afterwards. At one time I used the guillotine invariably, employing the Whillis-Sluder method. I now prefer dissection, but I still frequently employ the guillotine for children with enlarged (but not with flat) tonsils; and in hospital "tonsil clinics" it must inevitably be employed if one is to get through a large number of cases in the time available. The guillotine method, however, does cause bruising of the fauces, by squeezing the tonsil through the aperture of the guillotine and then manipulating it against the mandibular eminence, and sometimes a piece of the anterior pillar must be removed in order to enucleate a flat tonsil completely.

The avoidance of bruising and tearing means the avoidance of subsequent pain. In adults, therefore, I invariably dissect out the tonsils, employing a technique which I have modified from a method I first saw employed by Dr. George Cathcart, and which has also some points of resemblance with the method popularised by Mr. G. E. Waugh. By this technique a minimum amount of damage is done to the throat, and the wound soon epithelialises; there is little or no bleeding; stitching is never necessary, and ligaturing of vessels seldom so; and patients tell me that they have no pain—at the worst they may have some discomfort while swallowing during the first few hours after the operation. The technique may be criticised as being an elaboration of what ought to be quite a simple operation, and as requiring a somewhat longer anæsthesia than is necessary for other methods of enucleating tonsils; but I feel quite certain that the good results which it invariably ensures, the prevention of bleeding, and the avoidance of pain, make it well worth while.

Before the Operation.

The steps taken to avoid pain after tonsillectomy begin on the day before the operation, in order to prevent vomiting by minimising acidosis; it is seldom that my patients vomit more than once as they are recovering from the anæsthetic, and many do not vomit at all. Bicarbonate of soda is given three or four times during the day, before food, three or four teaspoonfuls being dissolved in half a pint of water. A child may be given a stick or two of barley sugar to suck. It is also wise to give the adult patient 20 to 30 gr. of ammonium bromide at night, to ensure a quiet sleep on the night before the operation. On the morning of operation a simple enema is given, and the patient is not allowed anything to eat or drink before the operation, not even a cup of tea or a glass of water. The operation should always be fixed, if at all possible, for an early hour, 8.30 or 9 A.M. An injection of atropine, 1/100th gr., is given half an hour before.

At the Operation.

The anæsthetic I prefer is open ether, given with oxygen, and the induction may be begun with nitrous oxide. The patient is placed on his back with a sandbag under the shoulders, and the head is lowered and well extended on the neck. This brings the chin, middle line of the neck, and the sternum almost in a direct line, and the trachea therefore slopes downwards towards the post-nasal space, so that blood cannot get down it. A good big side-to-side bite of the tongue is taken with the tongue clip (personally I use a towel clip), and the tongue is held forwards by the anæsthetist, a pad of gauze being placed between the under surface of the tongue and the teeth.

The jaws are held apart with an ordinary Doyen gag protected with rubber tubing or with O'Malley's gag, being careful not to catch or squeeze the lips. It is worth while taking some care over the placing of the tongue-clip and the gag, as not infrequently the only complaint of pain a patient has made has been of the pain in the tongue or the lips. The operator sits at the head of the table, and the anæsthetist stands on his left. It is a considerable convenience for *both* to have forehead lights, so that at least one light is always focused on the area of operation. Before beginning, a few drops of castor oil are dropped into each eye, to protect them in case any blood runs down.

The Operation.

With a pair of long tenaculum forceps the mucous membrane is picked up about half-way down the outer border of the tonsil, internal to the anterior pillar of the fauces, and as close as is conveniently possible to the tonsil. With a pair of long, straight, sharp-pointed scissors (those I use are 8½ inches long, and were specially made for me by Messrs. Mayer and Phelps) a cut is made into the mucous membrane which has been picked up, exposing the white capsule of the tonsil; the cut is continued first upwards towards the tongue, and then downwards towards the soft palate, round the border of the tonsil. The tonsil is then gently pulled forwards and outwards, and the cut is continued upwards again behind, separating the posterior pillar of the fauces from the tonsil. The operator must be careful merely to expose the capsule of the tonsil all round, and not to cut into it.

With a pair of Waugh's dissecting forceps a strip of gauze is introduced where the incision was begun, and pushed down and round between the tonsil and the anterior and posterior pillars, and then behind, wiping the tonsil in its capsule out of its bed. The tonsil is held at first with the other pair of forceps and then, as it comes farther out, with a volsellum. The dissection is done very gently and quite slowly; there is then little if any bleeding, and any troublesome vessel is secured at once with a pair of long artery forceps, which will stop the bleeding if left on for a minute or two. When the tonsil is free except for its lingual prolongation, this is clamped across with a pair of Birkett's artery forceps, and then cut off with blunt-pointed scissors; the artery forceps are left on for a minute or two to prevent any bleeding. A piece of gauze is then squeezed out of turpentine (as suggested to me—though it is an old-fashioned styptic—by Mr. Harold Kisch), packed into a tonsil bed, and held firmly there for a short time; this acts not only as a hæmostatic, but as an antiseptic, and lessens sloughing afterwards. A pad of dry gauze or cotton-wool is left in the tonsil bed, while the other tonsil is being enucleated in the same way.

When the tonsil is gently dissected out in this manner there should not be any bleeding to trouble about. I no longer apply ligatures, as I found that ligatures in the tonsil bed caused a good deal of discomfort to the patient afterwards. A few minutes devoted to waiting until bleeding has stopped, after securing the bleeding point or points with long artery forceps, will obviate the necessity for any ligatures, although I always have linen thread ligatures ready on my instrument table in case of unexpected trouble. The mucous membrane is cut all round close to the tonsil so as to preserve as much mucous membrane as one can, and to leave as small a wound as possible; instead of the wound being left gaping the mucous membrane forms a rounded border to it, and from its edge epithelialisation over the surface of the tonsil bed soon takes place, without any contraction.

After both tonsils have been removed, the throat, mouth, and tongue are cleansed of blood with warm saline solution, and any blood clot removed from the post-nasal space. A last careful inspection is made of the tonsil beds, to make sure that no bleeding point has been overlooked, before the patient is put back to bed.

After the Operation.

When the patient begins to come round I give him a hypodermic injection of heroin, $\frac{1}{6}$ gr., or omnopon, $\frac{1}{4}$ gr.; a child is given aspirin 10 gr. and potassium bromide 10 gr. per rectum or by the mouth. This gets him comfortably through the greater part of the day. When he has recovered from the effects of this, in the early afternoon, I spray the throat and all round the mouth with glycothymoline and warm water, half and half. I also give the patient an aspirin "throat bath," as Dr. Georges Portmann calls it: 10 gr. of aspirin powder is flung on the surface of half a tumbler of warm water, and before the aspirin has begun to dissolve it is held in the throat, first on one side and then on the other, as if the patient were going to gargle, but without gargling, which would hurt the throat. The aspirin powder thus gets right into the tonsil beds, where it has a very soothing effect. The patient should maintain complete silence. If he must speak at all he should speak in a whisper only, so that the sides of the fauces are not brought into play.

At tea-time, and again later in the evening, the patient may have some ice cream, or if he prefers he may drink some lemon-water or barley-water; but for the first 24 hours he should not drink very much, as swallowing may be uncomfortable. The glycothymoline sprays are continued every hour or two, the aspirin throat baths three or four times daily. At night the patient may be given aspirin, 10 gr., with potassium or ammonium bromide, 10 gr.; but he often settles down to sleep without any sedative.

Having got the patient comfortably through the first 24 hours he usually complains very little, if at all, of discomfort afterwards. He must keep as silent as possible for the next two days, speaking only in a whisper. The glycothymoline sprays and the aspirin throat baths are continued regularly every few hours as long as he is in the nursing home. An aspirin throat bath, or, as time goes on, an aspirin gargle should always be given immediately before a meal, and the food can then be swallowed without discomfort. On the second day the food should consist of bread and milk, custards, junkets, ice cream, jellies, tinned pears (which are the most easily swallowed fruit), and he may have barley-water and similar drinks. Milk must not be given, as it gets sticky and uncomfortable in the throat.

On the third day he may have, in addition, some fish or chicken. This should not, however, be pounded up into so-called fish or chicken creams; when prepared in this manner little particles get into the tonsil beds and cause considerable irritation. The patient should get out of bed on the third day, and may also have bread and butter, tea, or fruit. On the fourth day he should be able to eat ordinary food and drink ordinary drinks. He should be able to go home on that day or the next, and should begin to use his voice in the ordinary way, but without tiring it. Singers should begin to practise again at once, to assist in preventing any contraction of the pillars of the fauces.

Medical Societies.

ROYAL SOCIETY OF MEDICINE.

SECTIONS OF DERMATOLOGY AND STUDY OF DISEASE IN CHILDREN.

A combined meeting of these Sections was held on Dec. 17th, Dr. J. H. Sequeira, President of the Section of Dermatology, being in the chair, when Dr. A. M. H. Gray opened a discussion on the

Ætiology and Treatment of Infantile Eczema.

He confined himself to those varieties of eczema which attacked the face, dividing them into three classes: (1) those starting on the cheek or forehead, (2) those starting on the scalp, (3) those occurring in association with a general eczema starting on the body. In the first class an intensely itchy patch was usually followed by urticarial or erythematous lesions, not resembling bacterial infection. The prominent parts of the face suffered more than the hollows, suggesting that friction played an important part. Most of the infants were breast-fed, fat, and healthy looking. The second type often followed the rubbing of scurfy patches, and the face, when involved, usually broke out suddenly, suggesting a sudden breaking down of skin resistance rather than a spreading local infection. The type of the eruptions seemed much the same in all groups, and the clinical features depended more on the nutrition of the patient and the stage of the disease than on its place of origin.

The Underlying Diathesis.—In 40 cases of eczema seen at Great Ormond-street, 24 were of type (1), and of these ten subsequently developed asthma or recurring bronchitis; eight were of type (2) and six of type (3), and in these no chest trouble was reported. Thus it seemed that the primary facial cases had some specialised form of hypersensitiveness which was not present in the others which had only that form of acquired hypersensitiveness met with in adult eczema. The figures also supported the view that most scalp cases were infective or "seborrhœic." Five of the facial cases gave some history of recurrent rash, but always on the cheek, and there was no flexural eczema. Possibly that would develop later, as a large number of adults suffering from this gave histories of infantile facial eczema and asthma. Cyclical vomiting and hay fever had also been associated with these conditions, and the speaker was convinced that infantile eczema was one expression of an underlying diathesis which did not cease when the facial eruption got well.

Death in Eczema.—Five of the 40 children had died, one from encephalitis lethargica in later life, the others all in infancy from epidemic diarrhœa, empyema following multiple boils, and convulsions. The latter was in a scalp case and was the only one that raised the question of "eczema death."

Exciting Cause.—Some definite cause could usually be found for the primary eruption; in the scalp cases a bacterial infection was the starting-point but the facial cases were less easy to account for. Protein sensitiveness and digestive disturbance were the two theories. Most cases occurred in breast-fed children, so any protein-irritant must come from the mother's milk, but cutaneous tests with human milk had been extraordinarily inconclusive. It might be that the offending protein had been ingested by the mother and was not necessarily present at the time of testing. Several observers had found a tendency in eczema patients of all ages to give positive cuti-reactions to two, three, or more proteins, which suggested that the hypersensitiveness was not specific in infantile facial eczema. Recently certain observers had thought that different clinical types of eczema could be associated with indigestion of sugar, starch, and fat respectively. Nevertheless, as Towle and Talbot had pointed out, so many infants with indigestion of fats and sugars presented no skin lesion that there must still be some underlying condition. A large number of cases showed symptoms of over-feeding and improved considerably when the quantity of food was reduced. It seemed probable that indigestion might cause flushing and itching of the face and that the subsequent rubbing would produce in the child with a diathesis the chain of symptoms included in the primary face type.

Treatment.—The main point was to stop friction, and this could only be partially done by restraint. Change of temperature was the most potent cause of itching and should be avoided as far as possible. In non-septic cases zinc paste formed the best basis; in septic cases starch and boric acid or flavine poultices. Crude coal-tar was far the best anti-pruritic, and could be used on a face-mask, 3 per cent. coal-tar in Lassar's paste, with good results. No definite improvement followed the use of drugs, though bromide was sometimes useful, and reduction in the feeds was the only dietetic measure necessary. In early scalp cases sulphur and salicylic ointment was valuable.

The Problem of Idiosyncrasy.

Dr. H. C. **CAMERON** limited his remarks to the problem of what underlay the idiosyncrasy of particular infants to produce their tendency to eczema. How were we to explain the regularity with which an attack of measles would clear the skin absolutely and instantly of eczema? the curious association between vaccination and eczema? the risk of implanting a generalised vaccinia in an eczematous patch? He had seen one eczematous child who took chicken-pox perfectly normally. The "eczema death" might be septicæmic or due to interference with the respiratory function of the skin by the excessive use of ointments and bandages. Most of the fatal cases died with hyperpyrexia.

On the whole, the eczematous child was one who readily retained water in the tissues; it put on weight very fast and appeared very fit with a high colour, but was really an atrophic infant with the atrophy masked by the water, which might suddenly be turned out with great loss of weight. Judged by what they could do these children were not healthy. Eczema might be put into two groups: (1) that occurring in the very young, thin baby, a generalised form, and (2) that occurring in the older, fat child, on the cheeks. By fattening the first class and making the second thin the eczema would be cleared up. Many eczematous babies were spasmophiliac with a low calcium content in the blood and a tendency especially to tetany and laryngismus stridulus, and even when there were no gross manifestations the "latent signs" could very often be found in the eczematous baby. There were three conditions in which sudden inexplicable death might occur in the young child—eczema, spasmophilia, and status lymphaticus. Status lymphaticus was the post-mortem equivalent of the clinically hypolabile child, and these children had often had eczema during life. If such a child died a slow lingering death with dehydration there would be no trace of lymphoid hyperplasia post mortem. The eczematous diathesis of Czerny was the clinical analogue of status lymphaticus. In older children there were two diatheses (and in both a history of infantile eczema was often found). One was the type of child with a high lymph content in the body, an ill-defined margin to the hairy scalp, and an inveterate tendency to impetigo and chronic mucous catarrh of the lung and bowel; if there was a secondary infection with tuberculosis, as often happened, this type became the "scrofulous child." Czerny had written volumes on the ill-effect of milk in such children. The second was the intellectual, meagre, thin child, exhausting itself by the energy it put into everything, suffering from vasomotor troubles, pallor, prostration, and abdominal discomfort passing into cyclical vomiting. This child's condition was improved by cutting out milk-fat; on a high fat content in the diet they did badly and got acetonæmia, smelly breath, furred tongue, and constipation. There seemed to be some connexion between eczema and a milk diet; if the eczematous infant of 7–8 months were put on to a mixed diet with the minimum of milk it was much improved. The "diaper rash" was due to ammoniacal urine and could be put right by large doses of alkalies. Finkelstein had tried the substitution of his albumin milk, a high concentration of casein with reduction of whey and salt, and had been successful with the fat, watery infant but not with the thin type. In spite of the importance of breast-feeding, supplementary or mixed feeding was the right treatment for eczema.

Discussion.

Dr. H. G. **ADAMSON** defined infantile eczema as an eruption starting on the scalp, both cheeks and forehead, avoiding the orbits, nose, and mouth with a characteristic mask-like distribution. Usually, sooner or later, it involved the outer surfaces of the forearms and legs and sometimes the trunk. It consisted of circumscribed red areas covered with minute weeping points. The whole thickness of the skin was swollen to two or three times its normal. There was intense itching, which aggravated the condition. With careful protection from irritation it subsided and might never recur. If not cured in infancy it might last into childhood or adult life. A small percentage of uncured cases developed asthma in conjunction with the chronic eczema of childhood, but cured cases did not. Pathologically, it was a catarrhal inflammation characterised by serous exudation into the whole thickness of the skin. His experience was that it was quite independent of any digestive disturbance or food idiosyncrasy and was never influenced by dietetic measures. He inclined to the view that external irritants were the sole factor. It started on the parts exposed to changes of temperature, imperfect drying, and contact with the perspiring skin of the mother. Sudden change of temperature would produce flushing, and the irritation would lead to a dermatitis and finally an eczema. When the skin had become eczematised it became hypersensitive in other parts. Ninety-five per cent. of Dr. Arthur Hall's cases began in winter. Scalp cases always followed on scurf. The only fact against a purely external ætiology was the occasional association of eczema and asthma, but eczema might attack only one child in a family, or one of twins, and could be cured only by external treatment. Sudden death was very rare and probably due to chill, as in burns.

Prof. F. S. **LANGMEAD** said that the term "eczema" included many conditions—traumatic lesions, lesions due to heat, cold and vascular disturbance, and diseases of the nerves. It was a satisfying word, but if translated into English as "a weeping" or a sub-acute catarrhal dermatitis would be less satisfying and less likely to interfere with progress in discovering its cause. Irritants causing it included soap, wind, heat, scratching, &c.; excretions, stools, and urine: discharges; bacterial infections and irritations from within, sweat, and possibly blood. The eczema beginning about the buttocks of small babies was due to irritant excretions, especially ammoniacal fæces, and should not be treated purely as an external condition. These children took carbohydrate badly and the stool could be made alkaline by giving excess of protein; this was one of the best uses of a whole milk diet. Another type was the facial eczema, spreading over the body, in the well-nourished child with the full-moon face. It was in these that the sudden death occasionally happened. Probably there was some underlying constitutional factor in this class. A third group was associated with a protein idiopathy and the protein reactions of these should be explored. Epileptic convulsions might be heralded by a patch of eczema. In treatment something could be done with alkalies and a great deal with calcium lactate, especially if combined with parathyroid.

Dr. J. M. H. **MACLEOD** said that eczema was not a disease but a type of reaction; in the infant it was pure and more easily studied than in the adult. It was a local condition produced by scratching and rubbing. Temperature was an important factor; the majority of cases occurred in winter and yet gastro-intestinal disturbances were much commoner in the summer. He had never known it definitely produced by diet. It was extremely rare on the buttocks, which were subject rather to a papular urticaria or streptococcal infection. As soon as the local reaction had been produced the skin became hypersensitive all over and reacted more readily to minor irritants. The line to take was to concentrate on avoiding things that made the child scratch.

Dr. G. H. **LANCASHIRE** said that the majority of cases were simply the expression of a skin sensitive to external irritation, which was the only factor common to all cases. When the child was again exposed the eczema reappeared. In many cases the skin was in a neglected condition and must be cleansed first of all with starch-boric poultices, &c. Coal-tar was most useful; he preferred a 5–6 per cent. preparation with starch, vaseline, and zinc oxide. Much depended on the quality of the coal-tar. Death might be due to injudicious dressing with cold evaporating lotions.

Dr. H. **HALDIN-DAVIS** said that injudicious feeding might lead to scurfy lesions and spots, which would get better when the diet was put right, but the eczema with which dermatologists had to deal was a much more severe thing and could not be treated by diet or medicine. Protection and antipruritic measures were the sheet-anchor of treatment. We did not yet know enough to say what the constitutional defect was that underlay it. He had found that in some cases there was excess of sugar in the blood, and that the blood-sugar curve after a glucose meal showed a "sugar lag."

Dr. J. **MURRAY BLIGH** said that there was a local belief in Lancashire that if you got rid of the eczema too quickly the child died. There seemed to be something in this idea; pneumonia had some part in most of the fatalities. He had never seen eczema of the buttocks. The worst cases did not occur among the poor. For treatment a good nurse who could keep olive oil constantly applied to the whole body was the first essential. Three layers of butter muslin saturated with the best oil obtainable should be kept on the child and chloretone given to keep it quiet. Alkalies should be given as a routine because the children always developed another non-eczematous rash on the buttock. By this means the condition could be cured in about six weeks without change of diet. He was not satisfied that taking the baby off the breast had ever helped.

Mr. **FRANK COKE** said that he had obtained a history of eczema in 18 per cent. of his cases of asthma. Of 1000 cases, 225 were sensitive to food proteins, and in this group 37 per cent. had had eczema. He thought that wheat-sensitiveness played a large part. Eczema could be cured by a diet free from substances to which the patient was sensitive. On the face it was often due to sleeping on a feather pillow. Manganese and calcium cleared it up and kept it cleared.

Dr. S. E. **DORE** said that the seborrhœic type might be due to direct infection from the mother brushing her hair over the child. This could be cured locally. Thyroid was beneficial in some cases. He would divide eczema into (1) simple or traumatic, due to the infant's own secretions, and (2) seborrhœic—a very large percentage.

Dr. M. S. **THOMSON** said that the insomnia and exhaustion resulting from eczema upset the digestion, and the eczema could not then be cured until this was attended to. Hypnotics might be given more; chloral and potassium bromide was very useful. He did not see how the irritation theory could explain the sudden acute eczema in flexures. He had not seen cyclical vomiting associated with eczema, but he had with lichen urticatus.

HUNTERIAN SOCIETY.

THE second dinner meeting of the Hunterian Society was held on Dec. 14th at Simpson's Restaurant, with Dr. **HOWARD HUMPHRIS**, the President, in the chair. After dinner Dr. **CAMPBELL MCCLURE** opened a discussion on

INDIGESTION.

He said he would define indigestion, for the purpose of these remarks, as symptoms more or less connected with the upper abdomen and due to disorders of the stomach and intestines. Good functioning depended on two things, motility and secretion; but the stomach and bowels could either move too fast or too slowly and their secretions could be in excess or deficient, and all indigestion was due to one or other of these causes. The commonest initial symptoms were nausea, and pain varying between trivial and acute, in the upper abdomen. Pain in the epigastrium did not necessarily connote a severe lesion, but nevertheless called for careful observation, since there was a tendency for pains seated in remote parts of the abdomen to be referred to the epigastric region. Pain caused by pressure on the pylorus was referred to the middle line, slightly to the right, near the xiphisternum; that of gall-stones to the region of the ninth rib; and that of appendicitis to McBurney's point. A symptom of duodenal ulcer was severe gastric pain, and bad stomach-ache was also one of the signs of appendicitis, cervicitis uteri, and (in children) phimosis.

Difficulties of Diagnosis.

Apparent indigestion might, therefore, have nothing to do with the stomach, and the real trouble was often extremely hard to diagnose. Even after a close clinical examination the physician had to seek the help of the radiologist and the chemist, and even these experts might not be much more accurate than the clinician. Since the symptoms of pyloric and gastric cancer could both be produced by minor conditions, the necessity for close observation and reasoning was obvious. Many physicians tended nowadays to rely far too much on aids to diagnosis and did not think enough for themselves. Incredible though it might seem, there were still practitioners who left low corsets and underclothes in place when they examined an indigestion patient, and he had recently had three patients sent to him for indigestion, one of whom had an abdominal aneurysm and two acute appendicitis. These were bad examples of faulty examination. Moreover, X rays could rarely tell the clinician more about a case of indigestion than he knew himself, and for some radiologists the barium shadow had a fatal fascination. They would follow the advancing meal carefully down into the intestines and neglect the empty parts that it had left, and sometimes report free from organic disease a patient who suffered from functional dilatation of the stomach and duodenum and from pyloric spasm, whose cardia could be found by percussion right up to the fifth interspace well after the meal and who had been suffering from severe pain and tachycardia. Surgical interference would be disastrous to cases of this kind, and it was quite wrong to say that the physician cannot diagnose them.

Chronic Dyspepsia and the Long Stomach.

Graver forms of indigestion were due to gross lesions. Gastric ulcer, for instance, was a serious and painful condition that sometimes led to deformity such as the hour-glass stomach, and often called for surgical interference. In the many cases where the trouble came on without warning it was obvious that some factor was at work beyond mere irritation of the mucous membranes by unsuitable food. One man could eat and drink his fill for a long lifetime, another suffered from dyspepsia as a youth and died early; one would break down gastrically from worry and another would escape. In his opinion many of these cases suffered from a long stomach and a redundant colon from the day they were born. A long muscle lost tone more easily than a short one, and a long stomach, although it gave no trouble under good conditions, lost its tone directly the system encountered strain. Dyspeptics were nearly always deficient in calcium and their vitality was low; they were easily exhausted and fell ready victims to infection, which had a severe and rapid effect on the alimentary system and was often the cause of ulcers. This type of constitution was badly equipped from the start and when it came under stress the sympathetic system was liable to get out of hand. This lack of nervous control might depend on a lack of endocrine balance. The trouble was sometimes a failure to assimilate certain substances and sometimes a failure to eliminate others. The bulk of the treatment must be medical and not surgical. Admittedly gross lesions should be handed over to the surgeon, but after the operation they should be returned to the physician so that he could correct the remaining faults and obviate the danger of a relapse.

The Surgeon's Part in Diagnosis.

Mr. H. W. Carson, in opening the discussion from the surgical side, said that he was cheered by Dr. McClure's ready admission that surgery had a definite place in the treatment of indigestion. When he first went to St. Bartholomew's Hospital the number of abdominal operations performed in a year was not more than 30, and none of these had as its object the cure of indigestion. In his last year the figure was 96, of which only nine were for other complaints. The mortality at first was 70 per cent., and it spoke highly for the courage of the surgeons that they carried on in the face of this tremendous mortality until they reached the firm ground on which they now stood.

The surgeon was not a mere carpenter, diagnosis was an important part of his work. His power had been enormously increased by the fortunate advent of radiology and biochemistry soon after he began to deal with the problem of indigestion. It was now possible to say fairly accurately in any given case what had happened, but our knowledge about causation was still almost negligible. The nose, teeth, tonsils, and other potential foci of sepsis had long been suspect, but a more recent object of suspicion was food. There was no doubt that indigestion was on the increase, and it was very probable that the cause was the present faulty method of preserving food. Hardly any food escaped manipulation in some way; eggs were always suspect and milk was known to be very dangerous. Unfortunately, almost any attempt to improve the milk-supply immediately became the subject of acute political controversy and was blocked at the outset.

The most important kind of indigestion from the surgeon's point of view was that caused by gastric and duodenal ulcers. If it were true that the surgeon had no part in the treatment of any but chronic and recurring cases, the physician must claim the power of curing these ulcers, but the hospitals were packed with dyspeptics who had refused to get well and had been "thrown to the lions" for them to do their best. Duodenal ulcer was now treated by gastro-jejunostomy, often with appendicectomy and the removal of any causes of sepsis. 85 per cent. were cured, but the remainder became definitely worse, as some types of duodenal ulcer persisted in spite of gastro-jejunostomy. It was time, he thought, to ask whether the present method had not better be replaced by duodenectomy, which had a mortality of 10 per cent. but gave a positive result in the remainder.

Operations for gastric ulcer tended to become more and more radical. Results had been very poor except when the ulcer had been separated close to the pylorus, and the question arose whether gastric ulcer was not the first stage of a potential gastric cancer. The bulk of the evidence was certainly against this theory, but it underlay most of the partial gastrectomies of to-day. Whether the policy was justified only time could show. It was wrong to regard gastric and duodenal ulcers as fortuitous conditions, to be treated as well as possible. They were stages in a long course of toxæmia, which was not necessarily ended by operation, and they still required long and careful treatment after they left the surgeon's hands. It had been once believed that brain workers were especially liable to angina pectoris, but they were now known to suffer chiefly from duodenal ulcer. It was highly probable that many diagnoses of angina pectoris had been wrong, and that the pain felt near the heart was referred from the duodenum. Many physicians maintained that gall-stones were a medical complaint and could be cured by medical treatment. This belief was quite unjustified, for only surgery could remove them. It was, moreover, highly dangerous to delay the operation, as many cases showed serious complications. The difficulty lay in diagnosis, and none of the promised tests had given more than 15 per cent. of results. It was not possible to attempt a radical cure in more than 20 per cent. of cases of cancer of the stomach or 40 per cent. in cancer of the colon. Nearly all the cases that came to him had advanced growths in the stomach or obstruction of the colon, and this was because the early signs of this condition were not known, or at any rate not taught. The diagnosis was not difficult, and the fact that they escaped diagnosis was simply due to ignorance. One of the pitfalls of surgery was the right-sided abdominal pain. The origin was nearly always obscure and the surgical results disappointing. In spite of the surgeon's definite knowledge that appendicitis pain was always referred to the epigastrium, a pain in the right iliac fossa always seemed to attract him irresistibly to the appendix. Tenderness at the right iliac fossa was a reliable sign, but not pain. Diagnosis of appendicitis should never be made until the patient had had a severe attack, and certainly not on the right iliac fossa pains alone. In visceroptosis the scope of surgery was becoming more and more confined. The stomachs of many healthy people came below the umbilicus and their colons below the pelvic brim, and many had been made invalids by indiscriminate fixation. Every organ must have latitude, and it was better to cut loose structures that were normally fixed than to fix structures that were normally loose.

The Vicious Circle of Fear.

Dr. H. Crichton-Miller spoke of the vicious circle of fear and its effect on dyspepsia. When there was a possibility of grave and secret conditions the patient frequently gave way to great psychic exaggerations, and before we assessed the symptoms we should discount those that can be removed by reassurance and reason. A great many patients feared heart disease and a great many insomnia, which might come from visceral pains, heart pains, or nightmare. He protested against the habit of giving hot milk to dyspeptic patients for insomnia. They were totally unable to digest it, and inevitably woke up with pain due to fermentation and distension. Fear of the return of pain or hæmatemesis prevented us both from digesting and from seeing straight, and thus established the vicious circle. Any shock suspended the gastric processes, and could also be interpreted in terms of fear. It brought the mechanism of the adrenal into play and threw out the balance of the sympathetic and parasympathetic systems and affected either the secretory or the motor functions of the stomach. Atonicity did not depend upon any particular organ, and could only be remedied by patience. The mechanism by which fear generated wind was that the prolonged suspense caused prolonged inhibition of the adrenal secretion and therefore a vagotonic condition. During that time dilatation and fermentation were taking place. When the effort was over a sympathetico-tonic reaction occurred which compressed all the unstriped muscles and expelled the wind. Everything that made for emotional poise promoted good digestion, and all psychological methods had their value; sometimes mere reassurance was enough to break the vicious circle. The speaker deprecated the practice of dieting the dyspeptic as though he were a diabetic or a nephritic, and recommended that the patient should be encouraged to think for himself and help to work out his own dietary scheme. No group of diseases was so susceptible to "spiritual" healing as the dyspeptic group. Much quack healing flourished because a patient would give up self-pity in exchange for self-importance, which was stimulated by ceremonial and elaborate treatment, but this principle was thoroughly unsound.

Discussion.

Dr. A. C. **JORDAN** mentioned the alimentary health of certain Indian hill tribes and indicted as the cause of indigestion civilisation and the introduction of sugar and manipulated foods. That the colon especially had suffered much from highly refined cereals was shown by X rays. Chronic neuritis was one of the sequelæ of chronic dyspepsia.

Dr. D. M. **BARCROFT** pleaded for some system of adequate treatment. Alkalies were mere palliatives; the patient was probably not secreting the right kind of fluid in the stomach, but the practitioner did not know when to supply diastase, pepsin, or acid. The last-named often gravely increased the symptoms. He recommended suitable exercise and general hygiene to raise the tone.

Dr. E. **YOUNG** stated that in his experience nausea was a very unusual symptom. He did not agree that a gall-stone patient should be immediately sent to the surgeon; if he were free from symptoms after medical treatment he should not be subjected to the risk of operation. The large quantities of undigested starch often found in the fæces of dyspeptics showed the prevalence of dietetic error. Hot water and bicarbonate of soda were a better night-cap than milk.

Dr. **McCLURE** pointed out, in reply to Dr. Crichton-Miller, that fear was first felt in the epigastrium and that flatulence and dilatation of the stomach were its early signs; the first thing to do, therefore, was to get the stomach right. Psychotherapy was as valuable for correcting misinterpretation of symptoms as it was in definite mental disturbance.

LONDON ASSOCIATION OF MEDICAL WOMEN'S FEDERATION.

A MEETING of this Association was held on Dec. 8th at the house of the British Medical Association, Dr. **CHRISTINE MURRELL**, the President, being in the chair, when Dr. **MARJORIE BLANDY** read the paper on

Recognition of Early Nervous Disease,

which appeared in full in the last issue of THE LANCET.

Dr. **HELEN BOYLE** deplored the attempt to segregate into different hospitals cases of organic nervous disease and those of early mental disorder. The nervous system could not be split up; it should be regarded as a whole, since the separation of neurological and psychological factors could not in any case be attained. She was convinced that every mental hospital contained many cases suffering from encephalitis not necessarily encephalitis lethargica, but the form which might follow influenza or toxic disease.

Dr. **ELEANOR LOWRY** suggested that those cases with subjective olfactory symptoms should have the antra transilluminated to exclude local disease.

Dr. **IRENE YATES** spoke of the difficulty in diagnosing early disseminated sclerosis. Plantar response was difficult to obtain in the out-patient department.

In reply, Dr. **BLANDY** said that a true ankle clonus was pathognomonic of nervous disease, and if that were obtained it mattered less about the plantar response. She always contrived to warm the patient's feet by some means before testing their plantar response.

Dr. **ELEANOR SCARBOROUGH** read a paper on the influence of

Thyroid Feeding on Chronic Morphine Poisoning,

in which she described experiments on albino rats designed: (1) to combine thyroid feeding with chronic morphine poisoning, and to compare the susceptibility of rats to morphine with that of rats under the same doses of morphine without thyroid feeding. (2) To compare, during life, the influence of morphine, with and without thyroid feeding on the behaviour, body-weight, and temperature of the rats, and on the condition of the skin appendages; also, post mortem to compare the weights of certain organs and the structure of the thyroid glands. (3) To examine these results in relation to the various hypotheses which have been put forward to explain the relation between the activities of the thyroid gland and morphine poisoning.

She described the experiments in detail and gave the following summary of results obtained: (1) Chronic morphine poisoning when associated with thyroid feeding is not accompanied by any accentuation of the depressant action of morphine on the central nervous system, but rather by an increase in the signs of excitement of the cord. (2) The metabolic effects produced by combined morphine poisoning and thyroid feeding are more marked than those produced by either drug alone, and resemble the effects of pronounced hyperthyroidism. (3) The weights of organs concerned in metabolism are low in chronic morphine poisoning. The combination of chronic morphine poisoning with thyroid feeding tends to check the hypertrophy of these organs which otherwise accompanies thyroid feeding. (4) Chronic morphine poisoning is not associated with any change in the structure of the thyroid gland.

BRIGHTON AND SUSSEX MEDICO-CHIRURGICAL SOCIETY.

A MEETING of this Society was held on Dec. 3rd, Mr. H. J. **WALKER**, the President, in the chair, when Mr. **HAROLD F. SEYMOUR** read a paper on

Some Recent Methods of Investigating the Patency of the Fallopian Tubes in Sterility.

Mr. Seymour said that it was only within the last two or three years that a technique had been worked out which satisfactorily showed whether the tubes were blocked or not. After mentioning the various contra-indications, he described these methods. (1) That of Dr. Rubin, of New York: The injection of carbon dioxide gas through a uterine cannula, the pressure of the gas being indicated by a manometer. The apparatus was fully described and shown. The advantage of carbon dioxide over air was that the former was absorbed so much more rapidly and consequently it was more comfortable from the patient's point of view. Mr. Seymour commended the water displacement meter used by Rubin as it allowed the gas to flow very gently. (2) Mr. Victor Bonney's simple method of using air was referred to. (3) Demonstrations given to the speaker by Mr. Sidney Forsdike at the Soho Hospital for Women were described—the method of injecting air through a hollow uterine dilator. By any of these means, Mr. Seymour said, it was an easy clinical test to determine if there was a free passage through the tubes or not, a test which had now become a recognised gynæcological procedure. That insufflation of the tubes had a therapeutic effect, as well as a diagnostic side, was illustrated by one of Mr. Seymour's cases. A woman, of 32, married for three years, having had no children, desired a child and sought advice. She suffered from dysmenorrhœa and had retroflexion of the uterus. A round ligament shortening operation was done curing the retroflexion and the dysmenorrhœa. A year after the operation, as she had not become pregnant, her tubes were tested and the gas did not run away at 100 mm. pressure as it did in patent tubes, but mounted to between 150 mm. and 160 mm. before it began to run off, which showed a partial block. This patient has now a healthy child, having become pregnant immediately subsequent to the gas inflation. Some of Rubin's figures were given, further illustrating this therapeutic effect.

When the tubes were shown to be blocked the next procedure was to localise the block in collaboration with the radiologist. The methods employed were as follows: (1) Injections of lipiodol, as performed by Mr. Forsdike. Lantern slides of eight cases were shown illustrating this method. (2) Injections of barium sulphate emulsion into the body of the uterus. Mr. Seymour preferred Rubin's apparatus for diagnosing the block and Forsdike's lipiodol method for locating the position of the block.

Mr. Seymour then read a short paper on the possibilities of

Endoscopy of the Uterus.

and described his own hysteroscope. He said that for some months he had been experimenting with various means of examining the cavity of the uterus endoscopically under anæsthesia after dilating the cervix. A hysteroscope, made after the style of Chevalier Jackson's bronchoscope, with two suction tubes and the light at the distal end, had given very good results. The suction tubes rapidly removed any blood and mucus which obscured the view. A Mennell's electric vacuum pump was used for suction and the instrument was made in two sizes, one with a bore of 6 mm. and the other with a bore of 9 mm., the length of the tube being 28 cm. With a special pair of forceps a snipping of any growth seen could be removed for microscopic examination.

Mr. Seymour considered that endoscopy of the uterus was going to be useful as an aid to diagnosis of the various kinds of endometritis and to differentiate between a submucous fibromyoma and a carcinoma. It was easy to see a polypus up in the fundus and the opening of the tubes could be viewed. Diagnostic curettage was far from satisfactory, and endoscopy would, he thought, eventually supersede it.

Discussion.

Mr. H. J. McCurrich emphasised the unsatisfactory results from the point of view of diagnosis obtained by curettage as usually performed.—Dr. C. G. Whorlow expected that barium sulphate emulsion injected into the uterus would pass into the abdominal cavity and remain there as a foreign body and not be absorbed in 72 hours.—Mr. J. Griffith suggested the use of adrenalin as a hæmostatic in place of the suction apparatus.

Reply.

In reply, Mr. Seymour said that regarding the use of adrenalin for stopping the dripping of blood during an endoscopic examination of the uterus, he had tried it and found it to fail, whereas continuous suction was successful.

ABERDEEN MEDICO-CHIRURGICAL SOCIETY.

A clinical meeting of this Society was held on Dec. 3rd, with Dr. James Crombie, the President, in the chair.

Exhibition of Cases and Specimens.

Mr. A. Mitchell showed a boy, aged 8, suffering from Perthes's disease of the hip-joint, with accompanying skiagrams. He pointed out the difficulties of early diagnosis of tuberculous disease of the joint and the difficulty of differentiating between tuberculous lesions and Perthes's disease. In his opinion this patient had recovered much too rapidly to have had a tuberculous lesion. He also showed a girl, aged 18, with fusion of the bodies of the fifth, sixth, and seventh cervical vertebræ with practically no impairment of the movements of the neck. In this case there was a history of a fall when aged 6 months. —Mr. William Anderson confirmed Mr. Mitchell's opinion as regards the early diagnosis of hip-joint disease.

Mr. William Anderson showed a case of diffuse carcinomatosis of the breast, where the only complaints were stiffness of the shoulder and œdema of the arm, the duration of symptoms being two weeks. There was no palpable tumour in the breast, but marked cancer en cuirasse in the lower segment. The axillary glands were markedly enlarged. Microscopic examination of a small piece of skin showed extensive infiltration of the deeper layers with carcinomatous cells. Operative treatment was not advised.

Mr. G. H. Colt showed a man, aged 68, with marked fixation of the lower jaw following removal of a recurrent tumour of the right cheek and alveolar margins. The contracture was evidently not due to any affection of the temporo-mandibular joint, but rather to adhesion of scar tissue in the cheek, which had been split at the time of operation, to the upper and lower jaws. Mr. Colt asked for suggestions as to further treatment, his own suggestion being to divide the constricting bands and to insert an epithelial graft which could be kept in place by a stent mould with the jaw half open.

Mr. Andrew Fowler showed a girl, aged 13, whose fifth metacarpal bone of the left hand had been removed intact for a possible sarcoma. A tibial graft, including periosteum, had been inserted with very little shaping, and in the space of 19 months this graft had almost assumed the shape of a metacarpal bone with a head and new "metacarpo"-phalangeal joint. The usefulness of the hand was not impaired, there being two-thirds normal flexion at the new joint, and the patient, according to her own statement, is able to play octaves on the piano. On microscopic examination the tumour was found to be an osteochondroma. A series of skiagrams illustrated the changing appearances of the graft.—Mr. Mitchell emphasised the importance in these cases of beginning active and passive movements at an early date after operation.

Dr. P. Howie showed two cases of deformities of the hands, one of brachydactyly of the ring finger of each hand, and one of megalodactyly. He also showed two patients who had been operated on for carcinoma of the stomach, a male in July, 1921, and a female in 1909. The male patient until recently had no sign of recurrence when he had a hæmorrhage from the bowel. The female patient looked very well and had no signs of recurrence.—Dr. A. G. Anderson, Dr. J. Cruickshank, Mr. F. K. Smith, and Mr. William Anderson discussed the authenticity of the pathologist's findings in these cases. Dr. Cruickshank suggested that when a patient was alive a considerable period after an operation for carcinoma of the stomach the sections of the tumour ought to be sent to at least six pathologists for confirmation.

Mr. G. S. Davidson exhibited a case illustrating one of the rarer causes of neonatal hæmorrhage. The case was one of a vaginal hæmorrhage in a 5 days old child. He indicated the points in diagnosis and postulated an explanation of the cause of the condition.—Dr. **EDWARD WALKER** asked if Mr. Davidson could explain the cause of engorgement of the breasts in the newly born.

Dr. J. **CRAIG** exhibited a boy of 6 years who had during the last 18 months shown all the manifestations of rheumatic infection—viz., carditis, arthritis, chorea, and subcutaneous nodules. In Dr. Craig's opinion subcutaneous nodules of rheumatic origin are not so rare in this part of the country as is commonly supposed, he having seen three cases during the past year.—The case was discussed by Dr. A. G. **ANDERSON**, Dr. W. **BROWN**, and Dr. H. R. **SOUPER**.

Dr. A. C. **FOWLER** showed skiagrams of a gall-bladder containing numerous stones. Definite indentation of the pyloric antrum by the gall-bladder was seen during a barium meal investigation. The case was one of unexplained diarrhœa.

Dr. J. F. **CHRISTIE** showed a man of 70 with a slowly-growing ulcer on his left ear. The duration was 9 months without active treatment. On section the report was not definitely epithelioma. The Wassermann reaction was negative. There were no enlarged cervical glands. Dr. Christie asked for suggestions as to the diagnosis.—The opinion of the meeting was in favour of epithelioma and removal of the whole ear suggested as the treatment.

Election of Officers.

The following office-bearers and members of Council have been elected for the ensuing year:—President, Dr. J. Crombie; vice-president, Dr. J. F. Christie; secretary, Dr. H. Edgar Smith; treasurer, Dr. G. Rose; editor of transactions, Mr. G. H. Colt; librarian, Dr. W. Clark Souter; recording secretary, Mr. Andrew Fowler; assistant secretary, Dr. Robert Richards; members of Council, Dr. A. G. Anderson, Mr. F. K. Smith, Dr. H. R. Souper, Dr. G. M. Duncan, Dr. P. Howie, Dr. T. Fraser, Dr. J. Ross Mackenzie, and Mr. William Anderson.

PATHOLOGICAL SOCIETY OF MANCHESTER.

AT a meeting of this Society on Dec. 9th, Prof. E. D. **TELFORD** in the chair, a discussion on

Occult Sepsis

was opened by Dr. E. M. **BROCKBANK**, who referred to the various conditions of oral sepsis which produce metastatic affections of pyrexial and apyrexial nature in almost any organ of the body and which may be of slight nature or severe enough to cause death. He paid special attention to disease at the roots of old filled or crowned teeth which can only be recognised by X ray films taken and interpreted by experts in such work. This is a most dangerous dental lesion because there is no evidence of any disease about the teeth or gums to be seen by the unaided eye. The pyrexia which accompanies such foci or occult sepsis may vary from simple septic swinging temperature to a daily rigor of 105° F. or more lasting for weeks. Removal of such teeth leads to recovery from complications even after the lapse of several months.

Mr. **BARRON J. RODWAY**, who illustrated his remarks with a number of excellent slides, spoke of the difficulty of deciding how far oral sepsis was responsible for the causation of general illnesses, but drew attention to the frequency with which cases were seen where marked improvement followed dental treatment, which, prior to this, had come to a standstill under medical treatment. He described three types of dental condition likely to lead to a general infection—the neglected mouth, where the infection was chiefly the result of swallowing contaminated saliva and food; the mouth in which insufficiently treated non-vital teeth were present, where the infection took place entirely via the bone; and the mouth in which pyorrhœa was present, where the infection took place both from the swallowing of the products of the disease and also through the periodontal membrane. Reference was made to the question of deciding when to extract and how extensive an operation to make; and a comparison was made of the prospects of a possible cure of general disease at the price of having to manage with artificial dentures which, at the worst, would enable a selected diet to be dealt with, or the almost certain prejudicial effect of the continued presence of a definite source of infection by the retention of probably only partially efficient natural teeth in an unhealthy condition.

Mr. F. **HOLT DIGGLE**, after briefly dismissing the question of sepsis in the middle-ear cleft as a site for sepsis frequently overlooked—though in his opinion more commonly associated with disorders of malnutrition than arthritis or allied conditions—then considered the question of sepsis in the faucial tonsil. He pointed out that the submerged variety of tonsil was the greatest offender, and drew attention to the anatomical arrangement of the long, narrow, tortuous crypts, and the large absorptive area of the capsular surface of the tonsil, as factors rendering the tonsils peculiarly liable to the harbouring of unsuspected sepsis. After briefly considering the experimental and clinical evidence in support of the assumption that the tonsils may be the source of a systemic infection, he considered the results to be obtained by total enucleation of the tonsils. It was pointed out that tonsillectomy performed in cases of chorea did not yield such good results as those to be obtained in cases of arthritis, and particularly in cases of acute rheumatic infections. Mr. Diggle then dealt with the diagnosis of a septic tonsil, and pointed out that swabs taken from the tonsils of apparently healthy people were never sterile. He referred to the work of Howarth and Gloyne on this subject, and considered that factors other than bacteriological examination must be taken into account. He stressed the value of squeezing the tonsil to express material from the crypts, the bleeding from the crypts after moderate pressure, the local redness of the tonsil, and particularly the narrow red streak along the anterior faucial pillar, as perhaps less obvious evidences of tonsillar infection. He further considered that before a tonsil was sacrificed in cases of systemic infection we must be reasonably sure, first, that the tonsil is diseased; secondly, that the tonsil is the only source of infection; and, lastly, that if the tonsil is infected it is the source of the general infection.

In his opinion dental sepsis should be corrected before tonsils were removed, and a complete bacteriological examination of the intestinal and genito-urinary tract as well as the coöperation of the dentist and radiographer should be essentials in the investigation of every case. The question of sepsis in the nasal accessory sinuses was very briefly considered. It was pointed out that the absence of a purulent nasal discharge did not exclude the existence of pus in one of the sinuses. Mr. Diggle stressed the value of examination of all the sinuses by means of the suction syringe in doubtful cases.

Corrigendum.—Prof. Arthur Ellis wishes it to be known that he did not take part in the discussion on Nephritis at the Section of Medicine, R.S.M., on Nov. 24th. The remarks attributed to him in our issue of Dec. 5th (p. 1168) were made by Dr. H. A. Ellis.

APPOINTMENT OF A NEW VIVISECTION INSPECTOR.—The Home Secretary is about to appoint an inspector under the Cruelty to Animals Act, 1876. The post is permanent and is pensionable in accordance with the general rules governing the grant of pensions in the Civil Service, and the appointment will be subject to a period of probation. The salary will be £800 a year, together with bonus on the scale authorised for the Civil Service and travelling allowances at the usual Civil Service rate. The inspector will be required to give his whole time to his duties, and to reside at Edinburgh for the time being. Candidates for the post who possess the scientific qualifications required for the work and are not over 50 years of age, should apply to the Private Secretary, Home Office, Whitehall, London, S.W. 1, from whom further information may be obtained. Applications should be accompanied by one or two testimonials and particulars of the candidate's qualifications, and should reach the Home Office not later than Jan. 15th, 1926.

Reviews and Notices of Books.

BIOCHEMISTRY.

Applied Biochemistry. By WITHROW MORSE, Professor of Physiological Chemistry and Toxicology, Jefferson Medical College, Philadelphia. London: W. B. Saunders Company, Ltd. Pp. 958. 32*s.* 6*d.*

Prof. Morse's book aims at covering the whole field of biochemistry, both from its physiological and pathological aspects. Physical chemistry, methods of analyses, and even recent views on the structure of the atom and matter are dealt with. The range of the author's task thus will be appreciated, and Prof. Morse has succeeded to a really remarkable extent in fulfilling it. The book opens by defining the aims of biochemistry in general and tracing out the scientific ancestry of the great American biochemists. The author proceeds to a general but thorough consideration of the structure of matter, including the electron and proton theory. The lattice structure of crystals is discussed. Physical chemistry of solutions is next dealt with and particular reference is made to hydrogen-ion concentration. This section is an excellent, clearly written account of the physical chemistry of ionisation, and the author points out its application to the acid-base problems arising in the body. Enzymes and colloids are next reviewed, after which the elementary composition of tissues is dealt with. The three succeeding chapters are taken up with the chemistry of proteins, fats, and carbohydrates, whilst the fourth is devoted to the chemistry of tissues in general. The following chapter concerns the chemistry of foods, and then digestion, absorption, and metabolism are discussed. The biochemical aspects of urine, ductless glands, and nutrition are also dealt with quite fully. Under the title of Practical Exercises on Urine and Blood a scheme for practical work is included, and in an appendix methods for the preparation of various reagents and solutions are given. After each chapter a series of selected references is included, and throughout the text appear portraits of many of the workers referred to, in many cases short biographical notes being given.

From this outline it can be understood that here is no ordinary volume. The conception of providing a complete work on so huge a subject is admirable, and the author has succeeded in conveying to the reader the idea that biochemistry is an active dynamic subject. Some minor points are open to criticism. To the English reader the renaming of proteins, fats, and carbohydrates as proteids, lipids, and glucids is distasteful. There are a few errors in the biographical notes; for example, Dr. F. G. Donnan would undoubtedly be surprised to see himself described as a professor of physiology. Some few of the illustrations are redundant. But these things amount to nothing. Prof. Morse has performed a wonderful service to biochemistry and its students, and any reader equipped with his volume could be regarded as being well armed.

Monographs of Biochemistry. Edited by R. H. A. PLIMMER, D.Sc., and Sir F. G. HOPKINS, M.A., M.B., D.Sc., F.R.S. *Hexosamines and Mucoproteins.* By P. A. LEVENE. Rockefeller Institute for Medical Research, New York. London: Longmans, Green and Co. 1925. Pp. 163. 10*s.* 6*d.*

THIS volume consists for most part of a summary of the author's own researches. Dr. Levene has performed so much pioneer work himself in this field that the excellence of the volume goes without saying, and since he has published many recent papers, it is expedient to have his results in a monograph. In the present volume the subject of hexosamines and mucoproteins is dealt with very thoroughly and the historical summaries are full and useful. One of the most interesting chapters is that dealing with the Walden inversion. This difficult subject has received little attention in the English language, and Dr. Levene's account of its importance in relation to the hexosamines forms one of the most valuable features of the book. Dr. Levene points out in his introduction that there need be no apology for writing a volume on such a specialised subject, since mucoproteins are constituents of every tissue.

SEWAGE PURIFICATION AND DISPOSAL.

Second edition. By G. BERTRAM KERSHAW, M.I.C.E. Cambridge Public Health Series. Cambridge University Press. 1925. Pp. 339. 18*s.*

THE appearance of the second edition of this useful book will be welcomed by all who are interested in the subject of sewage disposal. Much work has been done since 1915, when the first edition appeared, especially with regard to the so-called activated sludge process. The new chapter entitled Activated Sludge Processes, Sludge Digestion, contains an account of the Sheffield bio-aeration process, which it is intended to apply to the whole of the sewage of Sheffield. We regard this as an important inclusion, because we believe that Mr. John Haworth, the manager of the Sheffield works, was the first to show that sufficient oxygen for biological purposes could be introduced into the sewage by mechanical agitation without the necessity for blowing in air. Mr. Kershaw, in his capacity as engineer to the Royal Commission on Sewage Disposal, had an excellent opportunity of familiarising himself with all methods, and he has utilised that opportunity to the full.

The new edition has been brought thoroughly up to date, and we commend it to all who have to deal with sewage purification and disposal.

SKULL FRACTURES.

Roentgenologically Considered. By WILLIAM H. STEWART, M.D., Roentgenologist to the Lenox Hall and Harlem Hospitals. New York: Paul B. Hoeber. 1925. Pp. 64. $12.

IN this volume by means of a series of fine skiagrams practically every possible fracture of the skull is illustrated. Each illustration is accompanied by a short clinical account of the case and the nature of the accident from which the injury resulted. A brief chapter on rontgenographic technique indicates precisely the method adopted, but we fear the surgeon might follow its instructions implicitly without obtaining such results, unless he possessed the supreme skill which these must have required. The plates are in every instance superb, and, quite apart from their surgical value, they present a remarkable series of studies of the human skull which should be of great interest to the anthropologist. The book is magnificently produced.

PRACTICAL PHARMACOGNOSY.

By T. E. WALLIS, B.Sc. Lond., F.I.C., Ph.C., Lecturer in Botany to the Pharmaceutical Society of Great Britain. London: J. and A. Churchill. 1925. Pp. 115. 7*s.* 6*d.*

THE work of the student of medicine is now far removed from that of his predecessors, who manufactured their own drugs, this work to-day being undertaken by the manufacturing chemist. He cannot, however, altogether afford to neglect any of the links in the chain of the healing art. This book of practical pharmacognosy will make an appeal to the doctor who takes interest in drugs as well as to the student in pharmacy, to whom it is of more vital interest. Mr. H. G. Greenish, who writes a commendatory foreword, points out that, too often, the teacher of pharmacognosy is contented to lecture on the subject and to leave the student to examine the crude drugs at his leisure, without systematic instruction or guidance, with the result that he acquires but a superficial acquaintance with the drugs at his disposal. In this book the earlier portion is devoted to 18 schedules of instructions, which state fully but concisely the details of practical work for each day of the course. The descriptions are clear and free from unnecessary material. The later part is devoted to the description of 45 medicinal plants indigenous to Great Britain; this sets out their characteristics and makes their recognition easy.

The writer is to be congratulated on his book and especially on the illustrations, largely by himself and his wife, which make the volume attractive.

PREVENTIVE MEDICINE.

Second edition, revised. By MARK F. BOYD, M.D., M.S., C.P.H., Member of the Regular Field Staff, International Health Board of the Rockefeller Foundation. London: W. B. Saunders Company, Ltd. 1925. Fully illustrated. Pp. 429. 20*s*.

THIS book, the first edition of which appeared in 1920, bears impress of a somewhat different outlook on public health from that of this country. Thus the subject of meat inspection is dismissed with a few words because "in the United States but little progress in meat inspection has been made"; on the other hand, rather more attention is paid to tropical diseases, such as malaria and uncinariasis. Interest attaches to a statement that "thanks to national prohibition this disease (alcoholism) will soon be a matter of historical interest in the United States." The book has not been written for the specialist but for practitioners whose daily work is causing them more and more to require general knowledge of preventive medicine, and the perspective is good. One of the most difficult subjects to deal with in an elementary way, that of statistics, is clearly and simply discussed. The book may be recommended to medical students who to-day in certain schools have to face a separate examination in public health; they can easily supplement their knowledge by reference to English standard text-books, many of which are not presented in so simple or so readable a form. The volume is profusely illustrated; for the most part the illustrations are good, but some are not informative.

EVOLUTION AND GENETICS.

By T. H. MORGAN. Princeton: University Press. 1925. Pp. 211. 9*s*.

Prof. Morgan says: "It has been pointed out that the power to reproduce itself puts the problem of the construction of a living organism on a different footing from the construction of a complex machine out of inorganic material." It is easy to believe that a problem is likely to reproduce itself a good many times if it is written about in this way. Unfortunately, Prof. Morgan's most interesting defence of the possibility of Mendelian mutants being the origins of new species is spattered with sentences more appropriate to those mystics of biology on whom he pours so much scorn. The book is a robust statement of his belief and is framed mainly as an answer to Bateson's statement that modern genetics had thrown no light on the production of fresh species of animals and plants. It is true that no observed mutant has shown the hybrid sterility of natural species; it is equally true that most mutants which have occurred under observation would have apparently no chance of survival in the real competitive world. But it is only necessary to suppose that one or both of these things happens very occasionally, and it may well be that it is necessary for permanent establishment that a hybrid should be sterile with the original stock so that the fresh form may have a position in nature delimited from that of its progenitors. And in a general way Prof. Morgan puts forward a strong case for looking on animals and plants as compounded on a gene basis. But it is not really necessary to his argument to show that Lamarckians are wholly wrong—which, indeed, he plainly fails to do. It seems much more likely that both views are partly right.

With some reservations we can commend the book as a stimulating critique of evolution theory from a modern point of view.

THE PHYSIOLOGY OF MIND.

An Interpretation based on Biological, Morphological, Physical and Chemical Considerations. By FRANCIS X. DERCUM, A.M., M.D., Ph.D., Professor of Nervous and Mental Diseases in the Jefferson Medical College, &c. London and Philadelphia: W. B. Saunders Company. 1925. Pp. 287. 16*s*.

Prof. Dercum believes that he has solved the great problem of mind and body. This he does by a series of ingenious speculations, based upon the findings of physiology and chiefly concerning neurones, which renders unnecessary the conceptions of psychology; in fact, he says in his preface that there is an inherent objection to the term "psychology," for psychology can only be regarded as a department of brain physiology. An example will show the apparent simplicity of this point of view, which is not novel, though the author uses the latest advances in knowledge to elaborate his explanations. He points out how "the retraction of the dendrites and axones of the neurones explains the palsies and anæsthesias of hysteria" (p. 225), and then describes how Babinski showed that the anæsthesia arises because of the method of examination. So we may imagine the examiner saying, "Do you feel this?" when straightway the dendrites and axones retract and the anæsthesia comes into being. There is no doubt that every human action, thought, or emotion can, with some ingenuity, be explained by a similar postulate. But is this helpful? And is it physiology?

WELFARE WORK IN INDUSTRY.

Edited by ELEANOR T. KELLY, B.A. London: Sir Isaac Pitman. 1925. Pp. viii. + 119. 5*s*.

THIS volume has been written by members of the Institute of Industrial Workers, under the editorship of its President, Miss E. T. Kelly. It contains a concise outline of the principles and practice of welfare work in factories, and while chiefly intended for those engaged in industry, is of considerable interest to all whose work brings them into contact with cognate problems. The book is written from an idealistic standpoint, and the chapter dealing with the activities of the works' doctor demands an extremely high standard of service from this hard-worked officer. A valuable section is the appendix, containing, amongst other things, specimen record cards for medical inspection, for the categorisation of accidents, and an interesting section on industrial fatigue.

The book is a reasoned attempt to establish a philosophy which will be a guide to the student and a basis for the professional worker.

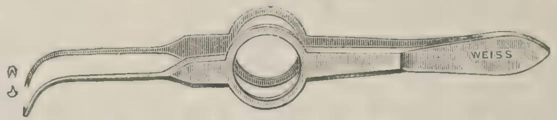
JOURNALS.

QUARTERLY JOURNAL OF EXPERIMENTAL PHYSIOLOGY. Vol. XV., Nos. 3 and 4. 1925. Pp. 201–450. 25*s*.—Among the articles appearing are the following. The Effect on the Stomach of Stimulation of the Peripheral End of the Vagus Nerve, by E. D. McCrea, B. A. McSwiney, and J. S. B. Stopford. The authors give a summary of the facts elicited by previous workers on the effects of vagal stimulation as regards (1) motor effects, (2) inhibition, (3) on the fundus and cardia, (4) on the pyloric sphincter, (5) the vasomotor phenomena, (6) on the duodenum, and (7) the relation of vagal stimulation to tonus. They discuss advantages and disadvantages of their technique, which consists of the introduction into the stomach of a balloon with an air system, or with a water system, or the water distension method, the observations being made by means of X rays. The main conclusions reached are as follows: The primary effect of stimulation of the peripheral cut end of either vagus on the stomach is dependent on the existing condition of the peripheral mechanism ("tonus"), and may be inhibitor or augmentor. The inhibitor or augmentor effect may involve both "tonus" and movement. The final effect of stimulation is to bring about augmentation of existing movement or to initiate movement. "Tonus" and contraction may vary inversely or directly.—The Effects of Fatigue and Temperature on the Adrenal Bodies of the Rat, by Swale Vincent. If white rats are exercised at room temperature in winter by means of a revolving drum made of wire netting and driven by a motor, their body temperature will fall and the chromaphil reaction of the adrenal medulla will be markedly reduced. If they are exercised at higher temperatures their body temperature will rise and the chromaphil reaction will not be reduced. At about from 18° to 20° C. the body temperature neither rises nor falls with exercise, and the chromaphil is unaffected. Considerable reduction of the temperature of the surrounding medium may, independently of exercise, cause a diminution of the chromaphil reaction if the animal's temperature becomes lowered, but this does not occur very frequently in the case of white rats. It seems, then, that the effect of exercise on the chromaphil reaction is not direct but secondary to the lowering of the animal's temperature.—The Active Principles of the Posterior Lobe of the Pituitary Body, by Walter Schlapp. Uncertainty exists as to whether the many physiological responses known to be evoked by extracts of the posterior lobe of the pituitary body are to be attributed to one or to more than one active principle. Histological and physical means have been employed. The author reviews the results already obtained and then describes his own method of preparing extracts from desiccated pituitary material. He finds that when depressor-free extracts are boiled with dilute hydrochloric acid, the oxytocic, pressor, and melanophore responses evoked by them are destroyed slowly and simultaneously. By treating depressor-free extracts with N-butyl alcohol it is possible to separate a fraction into which the greater part of the oxytocic activity has passed. By producing precipitates of lead sulphide in extracts by passage of sulphuretted hydrogen gas through suitable concentrations of lead acetate all the active principles are to some extent adsorbed. But the quantity of pressor and melanophore substance adsorbed exceeds that of oxytocic adsorbed by a significant amount. These results show that the oxytocic response on the one hand and the pressor and melanophore activities on the other must be attributed to distinct substances. The experiments, however, provide no positive evidence that the pressor and melanophore responses are due to distinct substances.—The Structure and Function of the Spleen, by John Tait and Martin F. Cashin. The authors give a full review of the literature of the subject as regards structure, the phagocytosis of particles, the reticulum, arteries, ellipsoids, veins, injection of vessels, the course of blood in the spleen, and its contractility. The spleens, chiefly of dogs and cats, were perfused by the arteries and veins with warm Ringer's fluid charged with specially prepared Indian ink particles. The authors find that the spleen is divided into segmental zones or lobes, corresponding to the branches of the arteria lienalis which enter it. These zones are at once arterial and nervous units. The scheme of subdivision of the splenic nerve corresponds to these segmental zones, and stimulation of a branch of the nerve causes only a section of the spleen to contract. Central to the cœliac ganglion (e.g., in the splanchnic nerve or in the anterior spinal roots) there is no such segmental representation in the branches proceeding to the spleen. The splenic vein is conspicuously larger than the splenic artery, that of the ox being five times the diameter of the artery. When a short section of the vein is electrically stimulated it contracts and remains in strong contraction for an hour or more, the outflow of blood being greatly impeded. When the spleen is perfused with Indian ink the particles may come to rest in four different situations: (1) in the ellipsoids, (2) in the spleen phagocytes, (3) on the ordinary reticulum, (4) on the walls of the venous sinuses. In the living animal deposition in the ellipsoids is temporary. Within three hours after intravenous injection of the ink phagocytes have begun to clear the particles from the spaces within the ellipsoids. Twenty-four hours later the ellipsoids are free. The phagocytes of the pulp retain the particles for weeks on end. At first they clear the ink off the reticulum. After a month they can be seen to have undergone a rearrangement, and some have migrated into the Malpighian corpuscles. The ellipsoids act as valves, readily allowing the blood to flow in the normal direction—i.e., from the interior to the exterior of the ellipsoid—but instantly closing against higher pressure applied to their exterior. The existence of these valves accounts for the difficulty of perfusing the spleen backwards—i.e., from vein to artery. Each ellipsoid is surrounded by a number of venous sinuses which become dilated when the venous pressure is increased.—The Appearances of Mammalian Erythrocytes under Dark-ground Illumination, by W. G. Millar. No sign of internal structure can be seen in the human erythrocyte.—Technical Points Important for the Study of the Metabolism of Rabbits, by V. Korenchevsky.—The Pancreas of Teleostean Fishes and the Source of Insulin, by Swale Vincent, E. C. Dodds, and F. Dickens.—The Sensitivity to Different Regions of the Spectrum of Individuals with Hypochromatic Vision, by H. N. Bradbrooke and H. E. Roaf.

New Inventions.

RING GRIP FORCEPS.

There is perhaps no more delicate piece of manipulation in all surgery than that required of the left hand of the ophthalmic surgeon when he picks up with his forceps a minute strand of the iris preparatory to iridectomy. The tissue to be gripped is so slight, it is so often obscured by overlying tissues or blood, and the margin of safety in the movement of the iris is so narrow that the mastery of the forceps through which the actual movement has to be made should be as perfect as is possible. For a perfect success the instrument—the forceps—should be a part of the hand of the surgeon, as much part of it as ungual appendages to his fingers. There are many excellent iris forceps in use, but they all remain an instrument in the hand—they do not become part of the hand. In the forceps, of which an illustration is here given, the customary solid side plates or bows are expanded so as to allow a ring to be cut through the flat of each side. These rings are 8 mm. in diameter inside, their edges are square and not bevelled. They are cut in the positions into which the thumb or first finger naturally falls when holding the forceps. When the forceps are taken up as in use the pads of the extremities of the thumb and index-finger fill these holes in the forceps, and at the moment that the teeth of the forceps engage the skin of the thumb and finger come into contact, so that one feels that the forceps are almost a part of the hand and that the points are just the extensions of the finger-tips. The sense of direction and security this gives is remarkable. The grip is applicable to any form of forceps.



Messrs. John Weiss and Son, Ltd., Oxford-street, London, are the makers of the instrument.

N. Bishop Harman, M.B., B.Ch. Camb.,
F.R.C.S. Eng.

THE LANCET.

LONDON: SATURDAY, DECEMBER 26, 1925.

THE EFFICIENCY OF THE HEART.

Progress in the study of any fundamental principle in science may conveniently be divided into three stages. The enunciation and qualitative proof of the principle naturally marks the first stage. In the second greater elaboration of technique leads inevitably to a quantitative interpretation of the particular phenomenon studied. This in its turn stimulates the imagination to a still deeper and more intricate examination of the intermediary steps involved and finally to a re-examination from a quantitative point of view of the facts thus brought to light. The study of metabolism, as was pointed out by Noorden, forms an excellent illustration of progress along these lines. The qualitative period may be said to have been inaugurated by Wöhler's synthesis of urea and by his proof of the synthetic capabilities of the organism in respect to hippuric acid. The quantitative period of Voit and Pettenkofer followed, and the gross chemical principles laid down by them are now being analysed in terms, qualitative and quantitative, of intermediate metabolism.

The study of the circulation is proceeding along comparable lines. It is nearly 300 years since William Harvey made his supreme contribution to biology by showing that "it is absolutely necessary to conclude that the blood in the animal's body is impelled in a circle and is in a state of ceaseless motion; that this is the act or function which the heart performs by means of its pulse; and that it is the sole and only end of the motion and contraction of the heart." In two lectures on the efficiency of the heart and its measurement, the second of which we print in this issue, Prof. Yandell Henderson points out that by means of a method introduced by Dr. H. W. Haggard and himself it is at long last possible to measure the circulation rate in man under a variety of physiological conditions and even in cases of moderate cardiac impairment. All the methods which have been used hitherto on man, and which at the same time may lay claim to some degree of accuracy, are based on Fick's principle—namely, that if we know the difference in the oxygen contents of the arterial and venous blood coming from and going to the lungs and at the same time the oxygen consumption of the individual under examination, the ratio of the latter to the former of these two figures gives us a true measure of the cardiac output, assuming, of course, that no oxygen is utilised in the lungs themselves. An exactly analogous method has also been adopted in which the ratio of CO_2 production to arterio-venous CO_2 difference is determined. The oxygen or CO_2 content of the arterial and of the venous blood is determined from analyses of arterial and venous alveolar air respectively, the gaseous tensions so found being interpreted in terms of blood oxygen or carbon dioxide content from the oxygen or carbon dioxide dissociation curves of the blood of the person investigated. These methods are complicated, and since they require the active and intelligent coöperation of the subject under examination are entirely unsuited to clinical use. Krogh's nitrous oxide method suffers from the same drawbacks. In ethyl iodide, however, Prof. Henderson and Dr. Haggard have found a volatile substance which not only possesses a low solubility coefficient, but also has the great advantage of being destroyed in the tissues, there being thus no necessity to limit the experiment to the time of one circulation. It has been shown that the partition coefficient of this gas between air and blood is 2. Given, therefore, the amount of ethyl iodide absorbed over a given period of time and a knowledge of the content of the alveolar air in this gas, we can readily calculate the volume of blood which has passed through the lungs in that time. The method is simple, accurate, and involves no more coöperation on the part of the patient than a simple basal metabolism determination.

The chief function of the heart is to supply oxygen at a high pressure to the working tissues. That is to say, the mean capillary oxygen unsaturation of the blood must be maintained at a low level by a correspondingly rapid rate of blood flow. Clearly the first indication of circulatory failure will be a rise in the arterio-venous oxygen difference. As Prof. Henderson states in his lecture, "the arterio-venous oxygen difference is the best possible index and measure of functional efficiency of the heart." Prof. Henderson's great contribution to medicine is that he has made it possible accurately to measure this difference not only in persons under varying conditions of physiological stress, but also in patients suffering from moderate degrees of cardiac impairment. He has determined that this difference is constant at a value of 3 to 4 volumes per cent. in dogs and men of very varying size, and appears to be a fundamental mammalian "constant" comparable to that of body temperature, of hydrogen-ion concentration of the blood, and of arterial pressure. On account of this constancy in the arterio-venous oxygen difference in all vigorous mammals and of the direct proportionality between basal metabolism and body surface, it is interesting to note that the volume of the circulation also becomes a function of body surface and not of body weight. Small animals therefore have a relatively more vigorous circulation than large, and this relative increase in the circulation rate with diminution in size is conditioned not by an increase in the stroke volume of the heart, but by an increase in rate. Indeed, Prof. Henderson has shown that the output of the heart in all healthy vigorous animals during bodily rest is 1·4 to 1·8 c.cm. of blood per kilo per beat. This figure is known as the stroke index. With moderate activity there appears to be very little increase in this index, the increased blood flow being mainly determined by acceleration in the pulse-rate. In more vigorous exertion, however, the second and third reserves of the circulation are called up—namely, an increase in the arterio-venous oxygen difference and an increase in the stroke index. Of extreme interest to clinicians is the relatively enormous increase (40 to 50 per cent.) in the circulation rate occasioned in normal men by a change from the upright to the lying posture.

Prof. Henderson has accumulated a large stock of data on the circulation in health, and these figures must prove of great value as a base line from which to compute the significance of corresponding figures found in pathological states. Should the method which he now places in the hands of physiologists prove as valid 300 years hence as Harvey's immortal discovery proves to-day, his contribution will indeed be significant.

SCARLET FEVER AND THE DICK TEST.

The control of scarlet fever is still unachieved. Since the passing of the Public Health Act of 1875 hospital isolation has afforded individual patients a better chance of recovery, but it has done nothing to diminish the incidence of the disease. This was admitted quite freely at a recent meeting of the Royal Society of Medicine,[1] when Dr. M. Greenwood stated that the only hope lay in immunisation, and there was none to disagree with him. Fortunately the publication of the work of the Dicks in 1924 has opened up an entirely new prospect, and the three papers on the Dick test which appear in our present issue will serve to illustrate what has already been done and what still remains to do. The first thing needful is to know who are and who are not susceptible to infection. We know broadly, write Dr. R. A. O'Brien and Dr. C. C. Okell, that a negative response to the Dick test indicates a high degree of non-susceptibility, but it is not so clear that a positive reactor may not possess some immunity. As Dr. Alexander Joe points out, the choice of toxin is of the utmost importance, and we are still far from possessing a standardised test material. Nevertheless, the toxin he used gave 95 per cent. of positive results in clinically recognised cases of scarlet fever during the first five days of illness, and 88 per cent. of negative results in persons with a previous history of scarlet fever. Dr. F. A. E. Silcock tells us that five of his cases at first clinically diagnosed as scarlet fever were found to give a persistently positive reaction, and none of them desquamated or showed any complication suggestive of scarlet fever. Further than this a strong positive reaction in contacts suggests that the disease is incubating. Negative reaction means either that the individual is immune, or that there are sufficient quantities of antitoxin circulating in the blood, as a result of previous infection or subinfection, to prevent development of the fever. Only about 20 per cent. of persons fail to acquire this immunity before 20 years of age. The test is undoubtedly effective in separating the susceptible from the immune. Recent work from the Birmingham City Fever Hospital continues[2] the work of the Dicks on the toxin of *Streptococcus scarlatinæ*. Although this organism does not completely fulfil Koch's postulates, it is pretty generally accepted as the causal parasite of scarlatina, and Dr. H. Henry and Dr. F. C. Lewis have concentrated on the preparation and standardisation of the toxin of this micrococcus. Their work indicates that the value and reliability of the Dick test is relative, and relative also is the immunity to the *S. scarlatinæ*, whether natural or acquired. A sufficiently small dose of the toxin will produce a negative reaction in all subjects, and a sufficiently large one will make them all positive. While they aim at the standardisation of the dose in some form of unit, they opine that the toxin-antitoxin combination on which the immunity depends is itself unstable and liable to dissociation.

The use of the Dick method for immunisation is on a less proven footing. The general conclusion seems to be that it is possible to produce immunity in 90 per cent. of susceptible persons by introducing large doses of scarlatinal toxin. Dr. George Buchan, in his recent presidential address to the Society of Medical Officers of Health, stated his opinion[3] that the Dick test and immunisation, or some modification thereof, should be made available in this country for those who would secure protection for their children against scarlet fever. He regards the task as a matter for local sanitary authorities, and points out that it would well repay these bodies to employ an epidemiologist to devote himself to the prevention and control of infectious diseases. Acting on this view the health department of the City of Aberdeen has issued a memorandum by Dr. J. P. Kinloch (dated Nov. 23rd) describing Dick testing and immunisation with a schedule of biological products for diphtheria and scarlatina which can be obtained on request at the City Hospital Laboratory. From China comes a report[4] of a new serum prepared from throat swabs of severe cases by a method radically different from that of the Dicks. Dr. S. P. Chen, superintendent of the Government Isolation Hospital at Peking, found the varieties of antiscarlatinal serum previously used of little value in the toxic type of scarlet fever, of which there is a large proportion in North China. Instead of using a toxin as antigen, Dr. E. T. H. Tsen and Dr. P. Z. King, of the Central Epidemic Prevention Bureau, used washed whole bacterial bodies, first dead and then living, after passage through a horse. The animal was immunised with 12 doses of dead cultures, and subsequently with 14 doses of living bacteria, in gradually increasing amounts. In the absence of a conclusive protection test for the scarlet fever streptococcus these investigators found it satisfactory to use in mice a virulent strain of hæmolytic streptococcus from a case of erysipelas. It may here be recalled that O'Brien and Okell found the hæmolytic streptococcus isolated from a case of lymphangitis to give all the Dick reactions. Nineteen different strains of scarlatinal coccus were used by the Chinese workers as there seemed to be trifling differences in growth among them. The serum has only been in use for a year, but as some of the cases regarded at first as hopeless made a good recovery, Dr. Chen issued a preliminary report. Improvement sets in within 48–72 hours after an intramuscular dose of 25–50 c.cm. of the unconcentrated serum, and in spite of continuance of the pyrexia, the patients evidently had turned the corner. Given early, the serum seemed to ward off serious complications and to cut short erysipelas.

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[1] Section of Epidemiology and State Medicine, The Lancet, Oct. 31st, p. 919.

[2] The Lancet, April 4th, p. 710, and Sept. 19th, 1925, p. 587.

[3] Public Health, November, 1925, p. 33.

[4] National Medical Journal of China, August. 1925.

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DENTAL RESEARCH.

In no department of medicine is inquiry into the nature of disease likely to be better rewarded than in dentistry. Pragmatism is increasingly the spirit of research. Four years ago the Medical Research Council set apart a committee to investigate dental disease on a broad basis, and the second report[1] of this committee has just appeared, containing the results of an inquiry by Mr. N. J. Ainsworth, L.D.S., into the teeth of 4000 children in public elementary schools. The investigation has been of a very arduous and complete character, the statistical reduction of the data being carried out by Dr. Matthew Young, a member of the Research Council's department of statistics. Definite replies are given to the main questions investigated. The calculated dates of eruption of the various teeth were found to correspond fairly closely with those given in dental text-books and generally accepted. The incidence of caries in the permanent teeth was found to be roughly the same in boys and girls, the tooth most often affected being the lower second molar (28·2 per cent. at 12–13 years), the upper lateral incisor being the most immune (0·4 per cent. at 9–10 years). Of the permanent molars the occlusal surface is by far the most frequently attacked; in the pre-molars the occlusal and distal surfaces equally, while it is the mesial surface of the upper incisors which suffers. Caries was found spontaneously arrested in a negligible proportion of the 6753 carious teeth examined—only about ½ per cent., in fact. Hypoplasia was associated with a double susceptibility to caries, and it is the hypoplastic area of the tooth that is attacked. Gingivitis, including slighter forms, was found in one-third of the children examined, older children having a larger proportion of the severer forms. In 23·2 per cent. of all children examined some degree of malocclusion was found.

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[1] Medical Research Council: Reports of the Committee for the Investigation of Dental Diseases. II. The Incidence of Dental Disease in Children. Special Report Series No. 97. H.M. Stationery Office. 1925. 1*s.* 6*d.*

The recent report [2] of the Research Committee of the Dental Board of the United Kingdom contains the interim reports of the various workers engaged in research under the auspices of the Board. Though the majority of the work is incomplete, it is obvious that dental science will be much enriched by these investigations which have only been made possible by the financial help of the Board. A very important piece of research is being carried out by Dr. W. W, Rosenhaim and Dr. E. E. Walker for the Department of Scientific and Industrial Research, to whom the Board entrusted a series of investigations on dental alloys and amalgams and on substitutes for vulcanite. The work on the silver-tin amalgams is now completed, and the report will shortly be published. It is stated that new facts have been obtained which may throw valuable light on the ageing of silver-tin alloys. Amalgam fillings play so large a part in conservative dentistry that this research is of special importance, and the dental profession is awaiting the results of the investigation with interest. Of equal importance is the research into vulcanisable rubber and its possible substitutes. Dr. Walker states that he has been engaged on the development of a synthetic product capable of acting as a complete substitute for vulcanite in dentures, and that considerable progress has been obtained. The investigation into the histology of enamel caries by Mr. H. C. Malleson has been recently published and has attracted much attention. Mr. Malleson has been successful in devising a technique whereby sections of enamel can be cut after decalcification. This has enabled him to demonstrate the features of caries in enamel with great clearness and to add much to our knowledge of the microscopical phenomena of caries. The work initiated by Dr. J. K. P. Clarke on the bacteriology of dental caries has been continued by Dr. Maclean, who is now engaged in a series of comparative experiments on the *Streptococcus mutans* of Clarke and the *Bacillus acidophilus odontolyticus* of McIntosh and his fellow workers. Dr. Maclean is also investigating the types of streptococci in pyorrhœa. Mrs. M. Mellanby is continuing her investigations into the dietetic and hygienic factors concerned in the calcification of the teeth in puppies, and is now attempting to produce caries in the teeth of dogs and other animals under experimental conditions with a view to studying the factors affecting the immunity of erupted teeth. Prof. J. C. Brash, whose work on the growth of the jaws has already proved so valuable, is continuing his madder-feeding experiments in pigs in regard to the growth of the jaws and the eruption of the teeth. An independent investigation by Mr. Wilson Charles on the growth of bone, also by madder-feeding, makes piquant reading, for Mr. Charles suggests that experiments with madder are of doubtful utility in demonstrating bone growth. Statistical and anthropometric investigations are being carried out by Mr. Ainsworth, Miss V. H. George, and Miss K. C. Smythe. Of these Mr. Ainsworth's report has now appeared and is summarised above. Dr. E. W. Fish has commenced an investigation into the nutrition of dentine during adult life. In his report he states that so far the analyses of dentine show that there is a definite increase in the calcium content during adolescence and a corresponding withdrawal of salts in later life. This would suggest that the structure of the teeth plays an important part in deciding the occurrence of caries, a view strongly supported by the investigations which have been carried out over a long period by Mrs. Mellanby.

Mr. J. T. Carter is investigating the structure of enamel in modern and prehistoric mammals and reptilia. He finds that the enamel pattern is very distinct in the lower primates and insectivora. Mr. Carter has been engaged for a considerable time in studying the comparative structure of enamel. At the time when the tooth of *Hesperopithecus* sustained its disastrous fall, Prof. Elliot Smith suggested that here was an opportunity of putting to the test the views of Mr. Carter, and seeing whether the enamel structure shed any light on the affinities of the owner of the tooth. Mr. Carter's researches have not become widely known, so that the announcement that a memoir on the enamel of fossil mammalian teeth will shortly be published will be welcome news to all interested in dental anatomy. An application for a grant was received from Messrs. R. A. Broderick, H. Round, and Hervey Wyatt to study the association of gastric ulcer and oral sepsis. They proposed to attempt to reproduce gastric lesions in rabbits by inoculation of cultures from patients with gastric ulcer associated with oral sepsis. In other words, this research was intended to repeat Rosenow's theory of elective localisation of bacteria and to test its validity. It is somewhat surprising that the Board, after consultation with the Dental Committee of the Medical Research Council, refused the grant on the grounds that the work did not appear "primarily to be concerned with dental research." Rosenow's views have attracted wide attention both in America and here, and it seems highly desirable that his experiments should be repeated in this country. It is true that their significance is not limited to dental sepsis, but it is chiefly in connexion with infection from the teeth that Rosenow's theory is discussed. It has so important a bearing on focal infection that we cannot understand the attitude which would deny to such an investigation as that proposed by Broderick and his fellow workers the right to be considered as a piece of dental research.

It is sure that all the various researches will not be equally fruitful, but it is certain that dental science will gain much from these investigations which cover so wide a field. Without the financial encouragement of the Dental Board many of these investigations could not have been commenced. Though many dentists have grumbled at the imposition of an annual fee by the Board, yet the fact that the revenue so obtained has enabled the Board to subsidise research on a scale never before approached in the dental profession in this country should reconcile them to this small recurrent obligation.

ARTIFICIAL LIGHT AND X RAY THERAPY IN SCOTTISH HOSPITALS.—The Scottish Board of Health has issued an interim report on Artificial Light and X Ray Therapy so far as they are used in Scottish hospitals and sanatoria, signed by Dr. Lewis D. Cruickshank, and Dr. Ernest Watt. At the moment, the report says, there is no necessity to press for the installation of more equipment for artificial light in sanatoria, but the authorities should not be discouraged from providing it if they wish to do so. It is, however, recommended that a few of the larger tuberculosis clinics in industrial districts should be encouraged to provide suitable light equipment for the treatment of outdoor cases, and that some of the larger child welfare clinics should be equipped with mercury-vapour lamps. In the case of new X ray equipment a certificate of safety should be obtained from the National Physical Laboratory.

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[2] Minutes of the Dental Board. Constable and Co., Ltd., 12, Orange-street, W.C.

Annotations.

"Ne quid nimis."

LONDON SCHOOL OF HYGIENE AND TROPICAL MEDICINE.

WORK upon the foundations of the new School, which is to be erected in Bloomsbury to the design of Mr. Morley Horder, F.R.I.B.A., and Mr. Verner Rees, A.R.I.B.A., will shortly be commenced, the contract for this work having just been placed. While this work is in progress the working drawings of the building will be completed and the scheme for the engineering services, which have been entrusted to Mr. T. J. R. Kiernan, M.Inst.C.E., will be drawn up. Concurrently with these developments the board of management of the School are taking such steps as are immediately possible for supplementing the facilities at present available for D.P.H. students. A course in Parasitology is already being given to students in the laboratories of the Tropical Division of the School, and it is interesting to learn that arrangements have now been made by the authorities of the School with Prof. R. J. S. McDowall to deliver—with the consent of the King's College delegacy—a course of lectures in Physiology as applied to Hygiene. These will also be given in the premises of the Tropical Division (the old School of Tropical Medicine) at Endsleigh-gardens, Euston. In the Tropical Division itself some important changes are taking place. The School is shortly to lose the services of Lieut.-Colonel A. W. Alcock, F.R.S., the Director of the Department of Entomology, who is retiring under the age-limit. He is to be succeeded by Dr. P. A. Buxton, who has been selected for the post from among ten applicants. Dr. Buxton is now on his way home from Samoa where, for the last two years, he has been engaged upon a research expedition sent out by the former managers of the School of Tropical Medicine. The post of assistant in the Department of Entomology has also fallen vacant through the retirement of Lieut.-Col. H. J. Walton, I.M.S. (retd.), but this post will not be filled until Dr. Buxton has taken over his new duties at some date early in the new year. In the Tropical Division, also, the extended course, which commenced in October, and has attracted students from all parts of the world up to the full capacity of the accommodation, has been strengthened; the Director has been able with the assent of the Air Ministry to secure the services of Wing-Commander H. E. Whittingham for a series of lectures on Biochemistry, and a short course by Lieut.-Colonel A. J. Gage, I.M.S. (retd.), on Poisonous Plants is being added to the curriculum. The appointment of Lieut.-Colonel G. E. F. Stammers, R.A.M.C. (retd.), to the post of lecturer in tropical hygiene marks a further notable development in the work of the School. The following subjects will be embraced by this course: Tropical and subtropical climatology, personal hygiene, maternity and child welfare, housing in the tropics, food and dietetics, hygiene of food, water, excreta and refuse, disinfection and disinfestation, health measures, hygiene of native labour in the tropics, disposal of the dead, public health administration, and organisation in the tropics. In addition to the lectures given on these subjects at Endsleigh-gardens the students will be taken by Colonel Stammers to see demonstrations, in and about London, in milk-supply, water-supply, sewage and refuse disposal, disinfection, and meat inspection, and a whole day will be given to a visit to the Army School of Hygiene at Aldershot. This extended programme in the study of tropical hygiene, although forming part of the general course of the Tropical Division, will be a self-contained course for which the School are prepared to accept a limited number of students at a fee of £6 6*s.* The lectures and demonstrations will extend over a period of about three weeks from Jan. 13th to Feb. 4th, 1926. The subject of hygiene as applied to tropical medicine has not received in the past its due share of attention, but this has now become possible owing to the extension of the length of the School course, which we have already brought to the notice of our readers.

RECENT CANCER RESEARCH IN ITALY.

Prof. G. Tizzoni and Prof. E. Centanni, of the Universities of Bologna and Modena, have lately published a joint preliminary note on the Modifications produced by Radium on the Pulp of Adeno-carcinoma in Mice and its Transformation into a Curative Vaccine.[1] They base their researches on the principle that the most efficient weapon with which to attack a disease caused by a virus lies in the pathological products evolved by the development of the virus itself. It is not necessary that the nature of the virus, to which Gye and Barnard have drawn attention, should be known. In many diseases due to a filterable virus, such as rabies, small-pox, infantile paralysis, encephalitis lethargica, glanders, &c., practical scientific results have been achieved, although in ignorance of the morphological characters of the virus. In these cases the essential solution of the problem consists in finding, for such products as contain the virus in a natural culture, the conditions under which the death of the virus can be effected without injuring its vaccinating properties. With this idea the present researches were undertaken, using the mammary adeno-carcinoma of mice as the subject and pure radium bromide, one-tenth of a gramme, as the destructive agent. It was found that cancer pulp subjected to radiation for not less than 24 hours when injected into the tissue surrounding the tumour in quantities of $\frac{1}{2}$ c.cm. arrested its growth and caused a gradual regression ending in complete disappearance. Cancer pulp subjected to radiation for a less time was found not to have this property, and when radiated for 40 hours was likewise inactive, having lost both its pathogenic and vaccinating power. These results seem important and are comparable to the attenuation of the virus and its transformation into a vaccine which was one of Pasteur's greatest discoveries. Control experiments were made with the pulp which had been frozen for 24–40 hours without being exposed to the action of radium and also with saline solution in doses of $\frac{1}{2}$ c.cm. which had been irradiated. Both these proved to have no effect on the neoplasm. The control experiments led to the conclusion that the effect of the radiated pulp is not due to induced and acquired radio-activity, nor to its preservation on ice, but to its transformation into a curative vaccine. What these observers appear to have achieved is to have been able to destroy entirely by means of radium the pathogenic power of cancer pulp while retaining either completely or in large proportion its vaccinating properties. Prof. Tizzoni and Prof. Centanni are continuing their work on this vaccine to ascertain more particularly if and under what conditions it retains its activity, and if equally in a dry or liquid state; if a greater concentration and conservability is possible; if it can be purified from inactive and extraneous matter; if it acts only locally and in the zone surrounding the tumour, or whether it has the same efficacy when injected at a distance so that its use would not be limited to external tumours or those in easily accessible situations. Another important matter is to solve the question whether every vaccine is specific exclusively for the tumour from which it is derived, or whether the vaccine from one tumour has the polyvalency necessary to make it of use in other varieties of tumour. In the light of the discoveries of Gye and Barnard this particular vaccine may be able to attack either the generic factor, in which case its task would be rendered easy, or, on the contrary, the specific factor, in which case great and sometimes insurmountable practical difficulties would be met with, and it would be necessary to establish precisely the amount of radiation to be used in each special case. So far we have been summarising without comment the work of the Italian investigators. The method of inducing resistance to tumour growth by the introduction of irradiated tumour material is, however, not new. It was first used by Contamin in 1910 and subsequently by Russ and his collaborators in 1914 and 1922, with results which seemed to show that such a procedure induced resistance against subsequent inoculation, and even against the growth of unestablished tumour. But quite recently experiments on a large scale[2] have shown all these claims to be unfounded.

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[1] La Riforma Medica, Oct. 19th, 1925.

THE PHYSIOLOGY OF TASTE.[3]

THIS book is, we believe, the first complete translation into English of Brillat-Savarin's famous "Physiologie du Gout," and appears exactly 100 years after the completion of the famous original. The publisher has made of its production in appropriate and shapely form a labour of love, and has, we understand, supplied the translation himself, an exploit upon which he is to be thoroughly congratulated, for Brillat-Savarin is not an easy author to follow justly and fully in any language but his own. The "Physiology of Taste" is a long book, though not so long as might have been expected from the probability that its preparation occupied many years and much note-taking in totally different milieux. As a rule, when the great epicurean is quoted the extracts are taken from two particular chapters, one treating of gourmandism as a whole and dealing with the pleasures of the table, and the other dealing discursively with gastronomy. Such excerpts give only the slightest indication of the range of Brillat-Savarin's knowledge, eloquence, wit, and multiplicity of personal experience, as evidenced by his familiarity with classical authors and English novelists, the princes of French literature, and a host of other French writers. All these are laid under contribution, while the medley is kept interesting throughout by appropriate anecdotes, amusing renderings of personal sensations, sound physiology, and records of life and travel in various parts of the world. The reader will gain from this book, therefore, a very different impression of the author than he is likely to have derived from the frequent allusion to him and his work in general literature, where he usually appears as a great cook, a sort of rival to Ude or Francetelli, especially to the former, who himself wrote a treatise entitled "La Science de Gueule." Brillat-Savarin was not a cook any more than he was a doctor; he was a barrister who held high legal offices, a municipal authority, a politician and perhaps a trifle of conspirator, an antiquary, a country gentleman and sportsman, a frequent host, and an honoured guest at distinguished tables. All these sides of him appear in the "Physiology of Taste," and though in the sense in which the word is used by science he cannot be called a physiologist, there are passages and, indeed, whole pages in his work which will be appreciated by medical men.

Brillat-Savarin awards a high place among "gourmand professions" to that of medicine. Its members, he says, "are gourmands by seduction, and would need to be made of bronze in order to resist the force of circumstances. The dear doctors are the more welcome wherever they go, because health . . . is the most precious thing in the world. Always anxiously awaited, they are sure of the most flattering reception. A pretty patient summons them; youth greets them with caresses; a father, a husband, surrenders his dearest to their care. Hope turns their right flank, gratitude their left; they are fed at the beak like pigeons, and must needs submit; in six months the habit is upon them, and they are gourmands past redemption."

Mr. Davies's fine translation is embellished with some excellent designs by Mr. Andrew Johnson.

HEALTH ON BOARD SHIP.

THE latest report of Dr. J. Howard Jones, medical officer to the Newport Port Sanitary Authority, contains an indictment of the Board of Trade as the Government department responsible for looking after the health conditions of seamen. Dr. Jones points out that the 1923 Instructions to Surveyors as to the Survey of Masters' and Crews' Spaces do not differ materially from those issued in 1913, and that many of the British regulations, in contrast with some of those issued by other countries, are merely suggestions which can be and are ignored by builders. Section 15 states that officers' and engineers' quarters should be so placed that they are entered from a passage-way rather than from the open deck. In spite of this, several new vessels have been at Newport with cabin entrances so exposed that the cabins cannot be kept dry under bad weather conditions. Section 15 also advises that the men should be berthed above decks in houses or poops rather than in forecastles. "Yet," writes Dr. Jones, "on a ship recently built for local owners the seamen and firemen were housed in a narrow confined forecastle in which two of the berths or cots were placed in the narrow triangular space at the forward end of the forecastle, consequently there was hardly room for the men to move about in their quarters, and those berths had to be unshipped to allow of access to the forepeak through the hatchway in the floor for the lowering of ship's gears' stores into the forepeak." The vessel referred to contained many other flagrant defects, rendering her living quarters unsatisfactory, but she had satisfied the Board of Trade owing to the fact that the Board only suggests certain things, which should be strict requirements. As to the lighting of crews' spaces, the new regulations are, says Dr. Jones, less satisfactory than the old, in that the use of electric light instead of daylight is permissible to a greater extent than formerly. In view of the prevalence of tuberculosis among seamen, especially Lascars, a better standard of lighting is very necessary. Section 26 states that in new foreign-going ships suitable bath-rooms and washing places should be provided for the men. This is not compulsory, however, for recently a new foreign-going ship visited Newport without such accommodation. The old practice of whitewashing the walls of crews' spaces is dying out and being replaced by the much better practice of using white paint or enamel. Dr. Jones describes the testing of a certain distemper or water-paint advocated for this purpose, for which antiseptic properties were claimed. It was found that staphylococci and diphtheria bacilli grew quite freely on culture media when mixed with this distemper made up according to the instructions. Dr. Jones gives a description of the crews' spaces of a new vessel to illustrate the lack of common sense frequently shown in designing.

> "The lighting on the men's quarter in the poop was seriously affected by the placing of four berths in both the firemen's and sailors' quarters against the ship's side, in consequence of which the lower bunks and most of the lower parts of the quarters were very dark. The quarters were cramped owing to the fact that the passage-way between the firemen's and sailors' quarters leading to the stores was unnecessarily wide. There was sufficient space available in the poop to provide two excellent berth cabins, a mess-room and bath-room or wash-house. Owing to the lack of bath-room or wash-house, the washing in wet weather would have to be done outside or in the combined living, feeding, and sleeping rooms or in a foul w.c."

Dr. Jones refers to the incomplete mortality tables for seamen published by the Board of Trade and the Registrar-General respectively. The Board returns give no idea of the fatality of certain diseases among seamen because the deaths only refer to so-called bona-fide seamen who die at sea and to those who are discharged from their ships on account of illnesses or injuries which prove fatal. Dr. Jones does not think that more than 10 per cent. of the deaths of seamen from tuberculosis are included in the Board's returns. He sums up the position by saying that the time is long overdue for a thorough revision of standards and of sickness statistics of seamen in the mercantile marine.

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[2] F. C. Wood and R. E. Prigosen: Jour. of Cancer Research, vol. ix., September, 1925; J. C. Small, M. J. Evans, and E. B. Krumbhaar, ibid.

[3] The Physiology of Taste, or Meditations on Transcendental Gastronomy. By Brillat-Savarin. With an introduction by Arthur Machen and embellished with designs by Andrew Johnson. London: Peter Davies, 1, Bedford-street, London, W.C. 1925. Pp. 326. 2 guineas.

SMOKE ABATEMENT.

THE chief obstacle in the way of public health authorities who desire to effect an abatement of the smoke nuisance within their areas is contained in Section 91 of the Public Health Act, 1875 (repeated in Section 24 of the Public Health London Act, 1891), wherein it is laid down that before smoke can be deemed to be a nuisance within the terms of the Act it must be "black" smoke. A factory chimney, whether in London or elsewhere, may belch forth volumes of dense, acrid, brown smoke of a suffocating character and in quantities which cause a pall to hang over the neighbourhood, and yet, under the terms of existing Public Health Acts, no notice can be served by the local authorities. It is possible that some manufacturers deliberately dilute their black smoke with steam in order to keep within the letter of the law. The Public Health (Smoke, &c., Abatement) Bill, introduced by Dr. A. Salter in the House of Commons on Dec. 10th, provides that any chimney emitting smoke in such quantity as to be a nuisance shall be deemed to be a nuisance notwithstanding that the smoke is not black smoke. Dr. Salter's Bill further provides that the term smoke shall include soot, ash, grit, and gritty particles. At present a chimney may emit immense quantities of thick dust or grit which may descend and cover everything in the neighbourhood with a heavy layer of dust, yet the offender cannot be dealt with because his chimney had not given forth black smoke. In order to have some criterion in case of prosecution the Bill provides that every local authority shall make by-laws prohibiting the emission of smoke in excess of a standard fixed by the Minister of Health, and the Minister is directed to fix such standard to which every local authority shall have regard when making the by-laws. It is intended that the Minister shall issue a colour test card to guide the inspector in making his observations and in deciding on a prosecution. Such graded cards are already well known in public health circles. Present penalties for contravention are too trivial to command attention from big manufacturers; increases are suggested from £5, £2, and 10s. to £50, £5, and £1 respectively. In London the suggested authority for the administration of the Act is made the London County Council rather than the borough councils, which are more susceptible to pressure from ratepayers and factory owners. A chimney is defined as including smoke-stacks, structures, or openings of any kind whatsoever capable of emitting smoke, as in the past there have been technical difficulties under this head. Chimneys of private dwelling-houses are specifically excluded, as the promoters of the Bill do not deem it practicable at the present time to issue a general prohibition of open coal fires. Should the low carbonisation treatment of coal at the pithead, the extraction of by-products, and the production of smokeless fuel become an economic possibility, the Act could be extended to deal with domestic chimneys. Section 4 of the new Bill runs: "It shall be the duty of a local authority on submitting proposals for the provision of houses for the purposes of the Housing Acts, 1890 to 1924, to satisfy the Minister that suitable arrangements are to be made for heating or cooking as are calculated to prevent or reduce the emission of smoke." In several recent housing schemes arrangements have been made either for (1) the complete elimination of coal fires and the substitution of gas or electricity for heating, or (2) central heating on the Dundee system. Outside London the County Council is to be given power to supersede any local authority which fails to carry out its duties under the Act of 1875. Any local authority is also to receive power in coöperation with manufacturers or others: (1) to inquire into or devise upon the methods employed in the prevention of smoke and the treatment of smoke in manufacturing operations, and as to the heating arrangements of large buildings; and (2) to arrange for the training of stokers in the best method of stoking. Certain authorities in the North have voluntary schemes on these lines without statutory sanction. Section 3 of the Bill provides for the extension of the list of noxious and offensive gases as enumerated by Section 27 of the Alkali, &c., Works Regulation Act, 1906. The Minister of Health may, after a public inquiry and after consultation with the local authorities or other interests concerned, make orders extending this list and amplifying the list of works mentioned in the first schedule of the Act. These are the main points in a Bill whose beneficent intent is beyond question.

A GRAPHIC SCHOOL REPORT.

IN his annual report for 1924 to the Cheshire County Council Dr. Meredith Young represents school medical service as by no means the dull, routine, wearisome work that it is sometimes painted, but as crowded with human interest. It is easy through his eyes to visualise the mother who "could not make" her child, aged 5 and suffering from "nerves," go to bed before she did; the parents whose children will not sleep in daylight; and the health visitors whose tact is tried to the utmost in efforts to convert "unclean" children into clean. The reported value of X ray for ringworm is generally accepted, but the statement that school lighting seems to affect the number of children with defective vision calls for statistical verification. A special inquiry into thyroid enlargement is of interest; the condition is most prevalent in the west and south of the county; at age 8 it is about equally prevalent in boys (2·3 per cent.) and in girls (2·5 per cent.), but at age 10 the percentages are 3·4 and 13·0 respectively, and at age 13, 4·0 and 16·0. Iodised salt is to be given a trial in the county. The rural child is reported not to compare favourably with the town child. "The rosy-faced, chubby country child is conspicuous by its absence. Instead we find children who are commonly pale, thin, and tired-looking . . . . overcrowding is very general and the older cottages are often vermin-ridden. . . . Villages send their milk, butter, and eggs to the large towns; there is not always left the supply sufficient for the villagers themselves." The children, badly shod, often walk in all weathers long distances on a hasty breakfast carrying with them a lunch of sorts. A dietary lacking in fresh vitamins is customary and anæmia is more prevalent than among town children; efforts to supply mid-day dinners are on foot. It is not a happy picture, but even so the rural child is rather better nourished and suffers less from rickets than the town child in the county. Bad clothing, poor nutrition, and unsatisfactory home conditions are found highly correlated; nevertheless, continued unemployment has not exerted an adverse effect on child physique. Rheumatism was found "equally common in urban and rural districts, in hilly and low-lying country; . . . it may well be considered pandemic." A positive correlation is reported between the stigmata of rickets and those of acute rheumatism. "I would almost hesitate," writes Dr. Young, "to diagnose a rheumatic condition in their absence." The combination of brilliant mentality and debilitating rheumatism is not uncommon, and a vicious circle is established when the child prefers to sit at home reading. Over-scholarship, combined with lowered vitality, is a real danger to these future brains of the country. Such problems are no doubt present in large measure in other parts of the country, but they are set out very pointedly in the report of the chief school medical officer for Cheshire.

PHYSICAL RESEMBLANCE AS EVIDENCE IN CASES OF DISPUTED PATERNITY.

THE Scottish law courts have once more rejected evidence of physical resemblance between child and alleged parent in a case where paternity is in dispute. In preliminary proceedings in his claim to the Seafield peerage Mr. Alexander Grant, who seeks a judicial declaration that he is the eldest lawful and legitimate son of the seventh Earl of Seafield, proposed to offer evidence that not only he himself but also his daughter and other members of his family resembled his alleged parents in feature, gait, and personal mannerisms. Lord Ashmore made an interlocutory order excluding these averments; from that order Mr. Grant appealed, but the Second Division of the Court of Session has (according to a report in *The Times* of Dec. 19th) dismissed his appeal with costs. It will be recalled that ten years ago in the Slingsby case an attempt was made to establish in the English High Court the legitimacy of a boy of 4 years of age by offering evidence inter alia of physical similarities between the child and his reputed parents. On appeal the House of Lords did not look with much enthusiasm upon evidence of this kind; Lord Shaw in particular, speaking with the authority of a Scottish lawyer, pointed out that in Scotland such evidence had been rejected for more than a century on the ground that it was "loose and fanciful," and added that in England it was open to the same objection. In the Seafield peerage claim Lord Anderson repeated Lord Shaw's two epithets, while the Lord Justice Clerk commented on the remoteness of investigating alleged resemblances unto the third and fourth generation. It was proposed, he said, to find resemblances to her grandfather in a grand-daughter. When he surveyed the vista opened up by these averments, he thought in Prof. Bell's phrase, that the situation would make wild work of the law of legitimacy. English law is not quite so rigid as Scots law in excluding evidence of this kind. It will be remembered that photographs were produced in the Russell divorce case to suggest the resemblance of baby to father, and that in the Slingsby case Sir George Frampton, the sculptor, acted as a kind of informal assessor in assisting the judge to detect details of physical similarity. English law seems to allow that, in cases of disputed paternity, the phenomenon of facial resemblance between parent and child is one which a jury may take into account and may weigh along with other evidence. But even English law must draw the line somewhere, and if in an English court it was sought to trace this resemblance through three or four generations, the judge, if he did not exclude the evidence altogether, would doubtless warn the jury not to pay too much attention to it.

PARATHYROID EXTRACT.

IN discussing the treatment of spasmophilia in young children in THE LANCET of Dec. 12th last, Dr. J. C. Spence commented on the recent work of J. B. Collip and his collaborators in the preparation of an extract from parathyroid glands and in the experimental demonstration of its active properties. In the early part of this year Collip published [1] the method of preparation. This consists in collecting fresh parathyroids from oxen and, after dissection, freezing them at -4° C. The active substance is prepared by extracting the glands with 5 per cent. HCl in a boiling water bath. On cooling, the fat is skimmed off and the fluid is rendered alkaline by the addition of caustic soda solution. Hydrochloric acid is added very carefully until the maximum precipitation of proteins at the iso electric point occurs. This precipitate is separated off, redissolved in alkali, and the procedure is repeated. All the solutions are combined, and herein lies the active principle. The administration of this substance, either by mouth, subcutaneously or intravenously, causes a marked increase in the blood calcium. The actual quantity injected does not seem to matter, but frequency is of the utmost importance. Injection into a parathyroidectomised animal in tetany resulted in rapid cure. Very remarkable general results are described; the viscosity of the blood is greatly increased, the osmotic pressure + 10 per cent., phophates + 100 per cent., non-protein nitrogen up to 400 per cent., blood halogens are decreased 10 to 15 per cent. Cases of infantile tetany and of œdema due to acute nephritis were greatly assisted by the extract. Collip stated[2] that it was possible to kill an animal through hypercalcæmia, the blood calcium rising to 29 mg. per 100 c.cm. In his earlier papers Collip maintained that the substance was of a simple nature, but in later contributions he expresses the opinion that it is probably a complex substance. In later papers the rises in blood calcium content induced by the injection of the extracts are not so great as those described in the earlier papers. The provision of a standardised reliable extract of parathyroid for therapeutic purposes is probably now a matter of time only, though, as we pointed out recently (THE LANCET, 1925, i., 89), it will take many animals to meet even a small clinical demand.

PART II. of the Registrar-General's Statistical Review, giving civil tables of statistics for the year 1924, price 5*s.*, is now on sale at H.M. Stationery Office. It follows close on Part I., recently noticed in our columns, and gives tables of population, of births, of infant mortality, of marriages and places of their solemnisation, for different parts of England and Wales. Public health officials will find it indispensable to consult the tables in Part II. as well as in Part I. for serious study of the vital statistics of their own and other areas. This volume also gives the number of Parliamentary and local government electors in each area of England and Wales. Part III. has still to appear.

AT a recent meeting of the managers of the Royal Infirmary, Edinburgh, reference was made to the retirement from the active staff of Sir Norman Walker, and a minute of thanks and appreciation was read, setting out his association with the infirmary as house physician in 1885, assistant physician for diseases of the skin from 1892–1906, and full physician in the skin department from 1906–1924. The minute goes on: "As treasurer of the Royal College of Physicians, as a member of the General Medical Council, as a medical educationist, and in many other positions of professional responsibility, Dr. Walker exhibited also great administrative and business qualities, and has played a leading part among his contemporaries." In conclusion the managers invited Sir Norman Walker to remain as consulting dermatologist to the Royal Infirmary.

MIDDLESEX HOSPITAL.—The rebuilding fund has now reached £259,000, a fraction over half the estimated cost of £500,000. The women of the Empire are being asked to contribute £50,000 for the Queen Alexandra Memorial Wing. The old Alexandra Ward, which sheltered French refugees during the Revolution, is about to be closed. A complete wireless installation for the 90 beds of the hospital's cancer charity was last week presented by the Wireless for Hospitals Fund.

HOSPITAL POLICY OF THE LABOUR PARTY.—At a conference of the provincial centre of the National Union of Trade Union Approved Societies at Manchester last week a report was presented from the Research Department of the Labour movement on the work of voluntary hospitals, The report declared that the present methods of workers. contributions, patients' payments, and letters of recommendation from lay subscribers are "unfair and objectionable," and that the hospitals ought to be "financed from the rates with substantial grants-in-aid from the National Exchequer." Consideration of the report was postponed.

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[1] Amer. Jour. Physiol., 1925, lxxii. (Proc. Amer. Physiol. Soc.), 182; Jour. Biol. Chem., 1925, lxiii., 39.

[2] Collip, J. B., Clark, E. P., and Scott, J. W.: Jour. Biol. Chem., 1925, lxiii., 439; Collip and Clark: Ibid., 1925, lxix., 485.

Modern Technique in Treatment.

A Series of Special Articles, contributed by invitation, on the Treatment of Medical and Surgical Conditions.

CLIII.—MASTURBATION IN YOUNG WOMEN.

The term masturbation is here used to cover all means employed in order to experience, through the individual's own body, pleasure which is normally gained in sex intercourse. These means include manipulation of the genitals manually or with instruments, crossing and rubbing the thighs, and indulgence in erotic phantasies without handling the genitals.

When a patient presents herself for treatment, our first concern is to help her to understand the true significance of the habit, for it is merely an outward sign that mental and spiritual development have not advanced hand in hand with physical development. It is permissible for the small child to love his own body and all the pleasures associated with its functioning, but if the growing girl and young woman are to add each her contribution to the evolution of the race, then they must forsake the paths of childhood, where self-love is the dominant note, and advance to a new viewpoint from which they have vision of personal insignificance in comparison with racial development. That this is a true interpretation is proved by the patient's attitude of childish evasion of all the problems of life, and the extreme disharmony into which she is thrown by the ever-recurring remorseful conflict provoked by indulgence in what she regards as a sinful habit. Our duty it is to help her to achieve harmony by facing responsibilities, great and small, and by directing all her faculties in unison to the art of living. A thorough physical examination is absolutely essential in this as in all psychological states, since high endeavour may be brought to naught by the backward pull of physical debility. Any weight or tension in the pelvis must be relieved by attention to constipation, to tight clothing (including the present-day weight-reducing rubber corsets), and to dysmenorrhœa. The latter point is of extreme importance, as the period of congestion preceding the onset of the menses is a critical time, during which an orgasm may occur in sleep, even if temptation has been resisted by day.

Before entering on further details of treatment, it is helpful to trace the habit back to its roots, which may be in early childhood or in girlhood. This at once destroys the plea put forward by the patient that she is helpless in the grip of an inborn or, as she may say, hereditary weakness, against which resistance is futile, and thus she can be led to accept personal responsibility. And investigation of the origin of the habit may in other ways prove helpful. In one case, for instance, a patient, badly in the grip of masturbation, expressed great disgust at the obsessive power in her thoughts of enema-syringes in association with certain shops in Charing Cross-road, where these and other appliances are displayed. On carrying back her thoughts to childhood, her earliest recollections of self-abuse were found to be inseparable from the administration of enemata for an extreme degree of constipation. An enema syringe was thus found to be (in the subconscious) not a thing she hated but the motif of her sex-phantasies and the instigator of indulgence. The Charing Cross-road shops were also proved to give, in reality, an additional fillip to her phantasies, and to heighten the pleasure of masturbation.

Early to bed and early to rise is an excellent adage to recommend, while the tonic effect of a morning cold plunge (for those who react with an exhilarating glow) is undoubted. A sedentary life sets an obstacle in the path of progress, not only because it produces, or retards recovery from, constipation, but also because periodically it gives rise to a pent-up feeling which demands an outlet and finds it most easily through indulgence in masturbation. Although the opposite point of view has been put forward—i.e., that an exhilarating walk has a provocative effect on one who is predisposed to masturbate, it is the general experience that subsequent fatigue negatives the initial sense of desire (should it occur), so that we can confidently recommend physical exercise in excess.

Strict avoidance of enervating atmospheres (moral as well as material), of openly or subtly erotic literature, plays and conversation, must be earnestly urged, so long as the patient is still traversing marshy ground, since these may turn victory to defeat. Many women have found, to their dismay, that intellectual work which has not proceeded smoothly is apt to provoke sex feelings. If this be the experience of the patient under treatment, then every effort must be made to reorganise her life till she is on terra firma. But it is absolutely essential that the alternative work suggested should demand a keen coördination of all her energies in achievement and thus provide an adequate outlet for her sex urge.

It may be well to repeat here, what has been said often before, that the modern psychological attitude towards masturbation as retarded development and not a sin must be made very clear to the patient, since the object of treatment is to concentrate on development and to discourage the negative attitude of resistance to temptation and remorse over failure. It is frequently necessary to repeat the explanation with varied phraseology and, as the patient's confidence is gained, to drive it home with illustrations gleaned from her own account of struggle and failure. However much we endeavour to capture the patient's imagination with the lure of an adventure in development, she must at the same time feel the support of practical ideas. To one patient, incredibly childish in her outlook on life, the suggestion was made to attack the problem of growth by making a list of minor evasions of responsibility. Among them she included: failure to brush the teeth regularly, inability to rise when wakened, dawdling over dressing, and unpunctuality.

Many authorities have advocated manual, outdoor labour as the most satisfactory solution for refractory cases, but it is possible, when such an arrangement is not feasible, to provide the right atmosphere in quite other surroundings, as proved by a report received recently from a woman of 41 who had masturbated since childhood, and for some years earned her living with the minimum of effort in wealthy families. Writing from the institution in which, at the suggestion of the writer, she had accepted work, she said the life there had been incredibly hard and even painful, but that never once, since her arrival six weeks previously, had she even experienced any temptation to masturbate.

From these few suggestions on treatment, it is obvious that atmosphere is the most important element in successful handling, and that even at the first interview the patient should, so to speak, experience the tonic effect of a bracing wind. Everything depends on the physician's capabilities as regards successful investigation, initiative to meet the needs of individual cases, or even the varying needs of one case, sympathetic understanding which begets confidence, and a certain driving force which carries the patient along and which both inspires and energises her. The response to treatment is sometimes very rapid, but some cases make a grave demand upon the physician's patience, initiative, and staying power.

Certain views which are frequently put forward upon the subject of masturbation demand critical attention. Some, for instance, contend that the harmfulness of masturbation is grossly exaggerated, and that it serves a useful end in providing an outlet for sex feelings till marriage becomes possible. Three objections can be opposed to this contention. (*a*) That the injuriousness of the habit consists in the fact already pointed out, that it is an indication of arrest of growth, whereas the world has need of men and women who have attained to the full stature of development; (*b*) that the social ideal to be aimed at is an increasing inter-dependence of the sexes, whereas masturbation renders a woman sexually independent of men; (*c*) this independence may, later, wreck a woman's chances of married happiness, for some women have, even early in married life, fallen back on masturbation because through it they experienced greater satisfaction. Others suggest that an outlet should be found in an irregular union, but overlook the fact that this is a pitiful evasion and not a solution of the patient's problem, if we accept it to be one of growth. Such a course inevitably increases the sense of conflict and disharmony, and brings with it an added burden of secrecy. Still others put forward what appears to be a plausible suggestion in advising the woman to avail herself of an opportunity of marrying, marriage being thus offered as a cure for masturbation. This is surely a poor conception of marriage. If we hold the function of wifehood and motherhood in high esteem, is it not well that the woman in question should first put from her childish things and plough the furrow of self-education with earnestness of purpose, before she attempts the difficult task of adjustment to marriage and motherhood? Also, in view of the fact that marital intercourse may offer a lesser satisfaction than masturbation, is it not better that the woman should first on her upward climb arrive at the point where she discovers that the habit of masturbation has fallen from her life as a worn-out and useless garment? For in some such words has many a one expressed to me the consciousness of increase in mental and spiritual stature.

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Special Articles.

KING EDWARD'S HOSPITAL FUND FOR LONDON.

A MEETING of the President and General Council of King Edward's Hospital Fund for London, for the purpose of awarding grants to the hospitals and convalescent homes for the present year, was held at St. James's Palace on Dec. 15th under the presidency of the Prince of Wales.

Death of H.M. Queen Alexandra.

Lord Stuart of Wortley (Chairman of the Management Committee) moved the following resolution:—

> "That the General Council of King Edward's Hospital Fund for London desire to record their deep sorrow at the death of Her Majesty Queen Alexandra, and their sense of the great loss which all connected with hospitals, in common with the rest of the nation, have suffered thereby. The Council desire respectfully to tender to His Majesty the King, Patron of the Fund, and the Royal Family, their heartfelt sympathy in the sad bereavement which has befallen them, and to offer the humble assurance of their loyalty and devotion."

Lord Somerleyton (hon. secretary) seconded the resolution which was carried unanimously, the Council rising in their places.

The Financial Position.

Lord Revelstoke (the hon. treasurer) said that it had been decided that the total of the ordinary distribution should be increased from £235,000 to £245,000, while it was also proposed that the special grants which they were able to distribute as the outcome of the legacies of the late Mr. and Mrs. Wells should amount to £57,000, the two distributions together making a total of £302,000. The increased distribution of £245,000 would be provided out of the income for the current year. Receipts from legacies were again considerably below the average; but, on the other hand, the Fund had received some most timely donations, including £6000 and £2250 from donors who wished to be anonymous, in addition to £5000 from Lady Strathcona. The British Charities Association, which gave £15,000 last year for distribution amongst hospitals in London, had this year given £20,000. A further amount of £85,485 10*s.* in connexion with the estate of Lord Mount Stephen had also been received. Apart from considerable funds retained for certain annuities, to which the Hospital Fund would be entitled to an eventual reversion, the sum he had the pleasure of reporting as already actually received in this connexion was no less than £666,889. A further £4500 had also been received from the estate of Mr. Samuel Lewis. These sums had, like previous receipts from the same sources, been placed to capital account. From the Wells Legacies, which were estimated at £200,000, the amount received to date was £162,240. If this year's grants were added to last year's, the total allocated so far was £138,000.

League of Mercy.

Sir William Collins, in making the annual statement on behalf of the League of Mercy, said the League approved the policy in regard to contributions from patients, so far as they were voluntary thank-offerings; but they associated themselves with Lord Cave's Committee in the hope that the policy would not work to the detriment of the indigent sick or prevent the admission of the very poor for whom the hospitals were primarily intended. So far as it was possible to estimate from the amounts already received, the League would be in a position this year to hand over £15,000 to the King's Fund, which was £500 more than last year. That would make the total of the contributions by the League of Mercy to the King's Fund £383,034. In addition, they were making grants of £9845 to extra-metropolitan hospitals, and in that they had to acknowledge the assistance of the British Charities Association, which gave £5000 towards that distribution. That made a grand total of the amount distributed by the League of Mercy in its 26 years to voluntary hospitals of £457,084.

Grants to Hospitals and Convalescent Homes.

The Chairman of the Distribution Committee (Sir Cooper Perry) presented the report of the Committee on the distribution to hospitals (including recovery and convalescent branches). The report stated that the amount placed at the disposal of the Distribution Committee for allocation amongst hospitals and their recovery and convalescent branches at the present distribution was £243,000, as against £233,000 last year. The number of hospitals applying for grants was 133, as against 118 in 1924. Taken as a whole, the hospitals continued to maintain in 1924 the improved financial position which had been gradually reached since the crisis in 1920, but additions were being made to the number of beds available, and the Distribution Committee found it necessary to make a considerable increase in the amount allocated to maintenance grants, the total being £214,075, as against £197,275 in 1924.

Prof. Winifred Cullis seconded the report, which was adopted.

Major Wernher (hon. secretary) presented the schedule containing the list of awards to hospitals (including recovery and convalescent branches) as follows:—

*List of Awards.**

	£
Acton Hospital (of which £500 to deficit on extension, in accordance with the scheme submitted to the Fund) ..	1,000
All Saints' Hospital	50
Babies' Hospital (Deptford Fund)	25
Baby Clinic Hospital (Kensington)	25
Beckenham Cottage Hospital	400
Belgrave Hospital for Children (of which £1000 towards the provision of new nurses' accommodation, in accordance with the scheme submitted to the Fund) ..	2,350
Blackheath and Charlton Hospital (of which £50 towards kitchen improvements)	250

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* The Distribution Committee draw attention to the fact that it must not be assumed that the reduction or absence of a grant implies dissatisfaction.

	£
Bolingbroke Hospital (of which £1000 towards erection of new ward block, in accordance with the scheme submitted to the Fund)	2,350
Brentford Cottage Hospital (of which £500 towards rebuilding and extension on new site, in accordance with the scheme submitted to the Fund)	525
British Hospital for Mothers and Babies, Woolwich	500
Bromley Cottage Hospital	100
Carshalton and District Hospital	100
Central London Ophthalmic Hospital	600
Central London Throat and Ear Hospital	150
Charing Cross Hospital	4,000
Chelsea Hospital for Women (including Convalescent Home at St. Leonards)	875
Cheyne Hospital for Children (including Country Branch at St. Nicholas-at-Wade) (of which £250 towards increased accommodation for artificial sunlight treatment and other improvements, in accordance with the scheme submitted to the Fund)	500
City of London Hospital for Diseases of the Heart and Lungs (Victoria Park) (including Convalescent Home at Saunderton)	3,850
City of London Maternity Hospital	1,250
Clapham Maternity Hospital	350
Dreadnought Hospital (Seamen's) (including Albert Dock Hospital, Hospital for Tropical Diseases, Sanatorium at Liphook, and Convalescent Home at Cudham) (of which £100 towards provision for artificial sunlight at the sanatorium at Liphook)	2,650
East End Mothers Lying-in Home (of which £1000 towards acquisition of adjoining building and its adaptation for nurses' quarters, in accordance with the scheme submitted to the Fund)	1,500
East Ham Hospital	150
East London Hospital for Children (including Convalescent Home at Bognor) (of which £100 to complete the extension and improvement of the X ray department)	3,350
Elizabeth Garrett Anderson Hospital (including Recovery Branch at Barnet) (of which £1000 towards extension, in accordance with scheme to be approved by the Fund)	2,725
Eltham and Mottingham Cottage Hospital	25
Enfield War Memorial Hospital	200
Evelina Hospital	1,000
Finchley Memorial Hospital	275
Florence Nightingale Hospital for Gentlewomen	300
Forest Hospital, Buckhurst Hill	175
French Hospital	350
General Lying-in Hospital	650
German Hospital	350
Gordon Hospital for Fistula	50
Grosvenor Hospital for Women (of which £500 towards provision of accommodation for resident medical officer and for nurses, in accordance with scheme to be approved by the Fund)	1,000
Guy's Hospital (of which £2000 towards recent improvements)	12,500
Hampstead General and North-West London Hospital (of which £250 towards improvements, in accordance with the scheme submitted to the Fund)	3,000
Hanwell Cottage Hospital (of which £25 towards provision of X ray department, in accordance with the scheme submitted to the Fund)	75
Hendon Cottage Hospital (of which £250 towards extension of ward block, in accordance with the scheme submitted to the Fund	550
Hornsey Cottage Hospital (of which £100 to deficit on extension, in accordance with the scheme submitted to the Fund)	250
Hospital for Consumption, Brompton (including Sanatorium at Frimley) (of which £250 towards removal of X ray department from basement, in accordance with the scheme of improvements submitted to the Fund)	1,250
Hospital for Diseases of the Throat	100
Hospital for Epilepsy and Paralysis (of which £500 towards extension of in-patient department, in accordance with the scheme submitted to the Fund)	2,250
Hospital for Sick Children	4,000
Hospital for Women (Soho-square)	1,000
Hospital of St. John and St. Elizabeth	750
Ilford Emergency Hospital	300
Infants Hospital (of which £150 to reduce debt)	500
Invalid and Crippled Children's Society Hospital (Canning Town) (of which £250 towards extension of out-patient department, in accordance with the scheme of extension submitted to the Fund)	700
Italian Hospital	300
Jewish Maternity Home	35
Kensington Dispensary and Children's Hospital (of which £500 towards removal and extension, in accordance with scheme to be approved by the Fund)	525
Kensington, Fulham, and Chelsea General Hospital (of which £1000 towards rebuilding and extension, in accordance with the scheme submitted to the Fund)	1,100
King Edward Memorial Hospital (Ealing)	500
King Edward VII.'s Hospital for Officers	250
King's College Hospital	7,500
Kingston-upon-Thames Victoria Hospital	100
London Fever Hospital (of which £25 towards ward kitchen)	525
London Homœopathic Hospital	1,750
London Hospital (including Recovery Branch at Reigate) (of which £1,000 to improvements, in accordance with the scheme submitted to the Fund)	14,625
London Jewish Hospital (of which £500 towards extension, in accordance with the scheme submitted to the Fund)	750
London Lock Hospital (of which £500 to maintenance of Harrow-road hospital and £100 to maintenance of Dean-street hospital, and £1000 towards the building of an extension of the out-patient department at Dean-street, in accordance with scheme to be approved by the Fund)	1,600
London Temperance Hospital (of which £750 to reduction of debt)	2,500
Maternity Charity and District Nurses' Home (Plaistow) (to the hospital: of which £250 to deficit on rebuilding and extension, in accordance with the scheme submitted to the Fund)	650
Medical Mission of the Good Shepherd, Babies' Home (Hoxton) (of which £25 to maintenance of babies' ward, and £25 towards improvements)	50
Metropolitan Ear, Nose and Throat Hospital	25
Metropolitan Hospital (of which £2000 towards new nurses' home, in accordance with the scheme submitted to the Fund)	6,000
Middlesex Hospital (including Convalescent Home at Clacton)	7,400
Middlesex Hospital Cancer Charity	1,000
Mildmay Memorial Hospital	450
Mildmay Mission Hospital (of which £500 towards nurses' home, in accordance with the scheme submitted to the Fund)	1,700
Miller General Hospital for South-East London (including Convalescent Home at Bexhill) (of which £1650 towards extension, in accordance with the scheme submitted to the Fund)	5,225
Mothers' Hospital of the Salvation Army (of which £400 to deficit on extension, in accordance with the scheme submitted to the Fund)	900
Mount Vernon Hospital (Fitzroy-square and Northwood)	1,200
National Hospital for Diseases of the Heart (of which £500 towards extension of out-patient department, in accordance with the scheme submitted to the Fund)	800
National Hospital for the Paralysed and Epileptic (including Convalescent Home at Finchley)	4,000
Nelson Hospital (South Wimbledon) (of which £250 to deficit on extension, in accordance with the scheme submitted to the Fund)	950
Northcourt Hospital and Home for Sick Children (Hampstead) (in consideration of the fact that curable cases are admitted)	75
North Islington Infant Welfare Wards	50
Norwood and District Cottage Hospital	450
Paddington Green Children's Hospital (including Convalescent Home at Slough)	1,100
Passmore Edwards Hospital for Wood Green, &c.	100
Phillips Memorial Homœopathic Hospital, Bromley	15
Poplar Hospital for Accidents (including Convalescent Home at Walton-on-the-Naze) (of which £250 towards new nurses' home, in accordance with the scheme submitted to the Fund)	475
Prince of Wales's General Hospital (including Convalescent Home at Nazeing) (of which £500 to reduce debt and £100 towards new mortuary, in accordance with the scheme submitted to the Fund)	5,200
Princess Louise Kensington Hospital for Children (*see* Kensington Dispensary and Children's Hospital)	
Queen Charlotte's Maternity Hospital (of which £500 to reduce debt)	2,000
Queen Mary's Hospital for the East End (including Convalescent Home at Theydon Bois)	4,150
Queen's Hospital for Children (including Convalescent Home at Bexhill)	4,250
Royal Dental Hospital of London	250
Royal Eye Hospital	750
Royal Free Hospital (of which £1000 to reduce debt)	6,000
Royal Hospital (Richmond) (of which £250 towards extension, in accordance with the scheme submitted to the Fund)	1,000
Royal London Ophthalmic Hospital (of which £500 to reduce debt)	3,500
Royal National Orthopædic Hospital (including Country Branch at Stanmore) (of which £1000 towards extension of out-patient department, in accordance with the scheme submitted to the Fund)	5,500
Royal Northern Hospital (including Royal Chest Branch in City-road, Recovery Branch at Southgate, and Convalescent Home at Clacton) (of which £750 to reduce debt, and £500 towards additional heating apparatus, in accordance with the scheme of extensions and improvements submitted to the Fund)	8,700
Royal Waterloo Hospital for Children and Women (including Convalescent Home at Whippingham) (of which £1000 towards new nurses' accommodation, in accordance with the scheme submitted to the Fund)	3,275
Royal Westminster Ophthalmic Hospital	650
St. Andrew's Hospital (Dollis Hill)	250
St. Bartholomew's Hospital (of which £1000 towards new nurses' accommodation)	7,000
St. Columba's Hospital	350
St. George's Hospital (including Recovery and Convalescent Branch at Wimbledon)	7,000
St. John's Hospital (Lewisham) (of which £100 towards extension of out-patient department, in accordance with the scheme submitted to the Fund)	1,100
St. John's Hospital (Twickenham)	100
St. John's Hospital for Diseases of the Skin (of which £100 towards improvements, in accordance with the scheme submitted to the Fund)	400

	£
St. Luke's Hospital for Advanced Cases (of which £100 towards extension of nurses' accommodation) ..	400
St. Mark's Hospital (of which £250 towards extension of out-patient department, in accordance with the scheme submitted to the Fund)	550
St. Mary's Hospital	6,000
St. Mary's Hospital for Women and Children (Plaistow) (of which £250 to deficit on new nurses' home, in accordance with the scheme submitted to the Fund)	2,000
St. Monica's Home Hospital	100
St. Peter's Hospital for Stone (of which £250 towards new lift)	600
St. Saviour's Hospital for Ladies of Limited Means (Osnaburgh-street) (of which £100 towards improvements)	225
St. Thomas's Hospital (of which £1000 to improvements)	11,000
Samaritan Free Hospital for Women (including Convalescent Home at Amersham)	1,300
Santa Claus Home	75
Seamen's Hospital Society (*see* Dreadnought Hospital)	
South-Eastern Hospital for Children (Sydenham) (of which £750 towards new nurses' home, in accordance with the scheme submitted to the Fund)	1,550
South London Hospital for Women (of which £500 towards new out-patient department, in accordance with scheme to be submitted to the Fund)	1,500
Stoke Newington Home Hospital for Women	75
Streatham Babies' Hospital	25
University College Hospital (of which £1000 to reduce debt)	8,500
Victoria Cottage Hospital (Barnet)	100
Victoria Hospital for Children (including Convalescent Home at Broadstairs)	2,700
Walthamstow, Wanstead, and Leyton Children's and General Hospital (of which £1000 towards extension, in accordance with the scheme submitted to the Fund)	1,900
Weir Hospital, Streatham	100
West End Hospital for Nervous Diseases	1,600
Western Ophthalmic Hospital	300
West London Hospital	5,500
Westminster Hospital (of which £1000 to reduce debt)	6,150
Willesden General Hospital	1,750
Wimbledon Hospital (of which £200 to deficit on new nurses' home, in accordance with the scheme submitted to the Fund)	550
Winifred House Invalid Children's Convalescent Hospital Home	25
Woodford Jubilee Hospital	75
Woolwich and Plumstead Cottage Hospital	25
Woolwich and District War Memorial Hospital Building Fund (special grant towards provision of general hospital, in accordance with the scheme submitted to the King's Fund)	1,000
Total	£243,000

Summary.

Total Grants to Hospitals (including Recovery and Convalescent branches) out of the ordinary distribution	243,000
Total Grants to Hospitals, January to December, 1925, out of the special distribution of the legacies of the late Mr. and Mrs. Wells	57,000
Total grants to hospitals and branches ..	£300,000

The motion was put and carried unanimously.

Distribution to Convalescent Homes.

The Chairman of the Distribution Committee (Sir Cooper Perry) then presented the report of the committee on the distribution to convalescent homes not attached to particular hospitals, which stated that the President and General Council had fixed the sum available for distribution amongst convalescent homes not attached to any particular hospital in London at £2000, being the same amount as last year. The number of applications eligible for consideration amounted to 42, also the same as last year.

Lists of Awards.

The list of grants were presented by Major-General Sir Cecil Lowther (hon. secretary) as follows :—

	£
All Saints' Convalescent Hospital (Eastbourne) ..	200
All Saints' Convalescent Home (St. Leonards)	25
Baldwin Brown Convalescent Home (Herne Bay) ..	25
Beau Site Convalescent Home (Hastings)	25
Brentwood Convalescent Home for London Children (Brentwood)	25
Brooklands Home (Invalid Children's Aid Association) (Worthing)	50
Bushey and Bushey Heath Children's Convalescent Home (Bushey)	25
Children's Convalescent Home (Beaconsfield)	25
Children's Cottage Hospital (Cold Ash, Newbury) (in consideration of the fact that convalescent cases are admitted	25
Children's Home Hospital (Barnet) (in consideration of the fact that convalescent cases are admitted) ..	25
Clevedon Sanatorium (Invalid Children's Aid Association) (Broadstsirs)	50
Convalescent Home for Children (Hawkenbury, Tunbridge Wells)	25
Convalescent Home for Poor Children (St. Leonards) ..	75
Convalescent Police Seaside Home (Hove)	75
Edgar Lee Home (Invalid Children's Aid Association) (Willesden)	50
Florence Emma Home (Invalid Children's Aid Association) (Dover)	25
Friendly Societies' Convalescent Home (Herne Bay) ..	25
Hamilton House (Invalid Children's Aid Association) (Seaford)	50
Home for Invalid Children (Brighton)	50
Kurandai Home (Invalid Children's Aid Association) (Hartfield, Sussex)	75
London and Ascot Priory Convalescent Home (Bracknell)	75
London and Brighton Female Convalescent Home (Brighton)	50
London Homœopathic Convalescent Home (Eastbourne)	25
Mental After-Care Association Homes (Fairlight) ..	150
Metropolitan Convalescent Institution (Bexhill, Broadstairs (Children) and Walton)	100
National Sunday School Union Convalescent Homes (Clacton)	50
Ranyard Mission Convalescent Home (St. Leonards) ..	25
St. Andrew's Convalescent Homes (Folkestone) ..	75
St. Andrew's Convalescent Hospital (Clewer)	50
St. John's Home (Kemp Town, Brighton)	50
St. Luke's Homes (Children) (Woodley, Reading) (in consideration of the fact that convalescent cases are admitted)	25
St. Mary's Convalescent Home (Birchington)	25
St. Mary's Home for Children (Broadstairs) (in consideration of the fact that convalescent cases are admitted)	50
St. Michael's Convalescent Home (Westgate)	50
Seaside Convalescent Hospital (Seaford)	75
Suffolk Convalescent Home (Felixstowe)	50
Sunshine Convalescent Home for Children (Felpham, Bognor)	25
Surgical Home for Boys (Banstead) (in consideration of the fact that convalescent cases are admitted) ..	25
Tilford Convalescent Home for Children (Farnham) ..	50
Victoria Home for Invalid Children (Margate) (in consideration of the fact that convalescent cases are admitted)	25
Total	£2,000

The motion, having been seconded by Lord Mildmay, was then put, and carried unanimously.

Wells' Legacies Distribution: Lists of Grants to December, 1925.

The Chairman of the Distribution Committee (Sir Cooper Perry) then presented the report of the committee on the special distribution to hospitals out of the Wells legacies to date, in aid of extensions, and Mr. Leonard L. Cohen (hon. secretary) presented the schedule containing the list of awards to hospitals out of the Wells legacies to date, as follows :—

Beckenham Cottage Hospital.—£3000 towards extension —viz., £1000 towards the deficit on the earlier stages of the scheme, increasing the number of beds from 25 to 40, £1000 to be payable on the completion and opening of the final stage, and £1000 to be the last £1000 required to free the whole scheme of debt; on condition that the final stage is put in hand by the beginning of October, 1925.

Belgrave Hospital for Children.—£2000 towards erection of new wing to be used temporarily for nurses' accommodation so as to enable the hospital to open 12 beds, thus increasing the number available from 62 to 74; to be the last £2000 required in order to secure a conditional donation of £10,000.

Bolingbroke Hospital.—£2500 towards extension from 60 beds to 92, to be the last £2500 to enable the extension to be opened free of debt, on the understanding that the balance is raised by the hospital and that, when the extension is opened, 10 beds will be reserved for accident cases.

Brentford Cottage Hospital.—£1000 towards the building of the new hospital, increasing the number of beds from 7 to 16; on condition that the contract is signed by Jan. 1st, 1926.

Invalid and Crippled Children's Society's Hospital.—£500 towards extension, increasing the number of beds from 28 to 40, as a grant to start the appeal for the scheme.

Jewish Maternity Hospital.—£1000 towards extension from 13 beds to 39, to be the last £1000 required to render the extension free of debt.

Kensington Dispensary and Children's Hospital.—£500 to first stage of rebuilding as Princess Louise Kensington Hospital for Children, on condition that beds are provided as well as an out-patient department.

King Edward Memorial Hospital, Ealing.—£2000 toward extension from 62 beds to 102; being £1000 to start the appeal for the scheme, and £1000 to be the last £1000 required to render the extension free of debt, without depleting the hospital's free capital, on the understanding that the work is put in hand by March 31st, 1926.

London Jewish Hospital.—£2500 towards extension, increasing the number of beds from 51 to 84, and including separate nurses' home and extension of out-patient department; £1250 of the grant to be payable when the nurses' home and out-patient department are begun, and £1250 when the whole scheme is finished.

London Lock Hospital.—£1000 towards the building of the extension of the out-patient department at the Dean-street Hospital.

Metropolitan Hospital.—£5000 towards new nurses' home and accident ward of 9 beds; to be payable as soon as a further £5000 has been raised by the hospital from other sources; on the understanding that the nurses' home will be put in hand by Jan. 1st, 1926, and that, when the ward is opened, 9 beds will be reserved for accident cases.

Middlesex Hospital.—£10,000 in July, 1925, as a first grant to the reconstruction scheme; and £10,000 in December, 1925, as a second grant.

Royal Free Hospital.—£1000 towards new children's ward providing 18 additional cots, on the understanding that, as a result of the consequent rearrangement of hospital beds, 9 beds will be provided for accident cases.

Royal Hospital, Richmond.—£1000 towards extension, increasing the number of beds from 66 to 82; to be the last £1000 required to enable the extension to be opened free of debt; on the understanding that the balance is raised by the hospital without drawing on investments now held for other purposes, and that, when the extension is opened, 4 beds will be reserved for accident cases.

Royal National Orthopædic Hospital.—£5000 towards extension of out-patient department at Great Portland-street; to be the last £5000 required to enable the extension to be opened free of debt, on condition that the work is put in hand by Jan. 1st, 1926; and £3000 towards extension of country branch at Stanmore from 100 beds to 252, to be the last £3000 required to complete the first £40,000 for the scheme; subject to the conditions of the grant of £5000 to the out-patient department extension being fulfilled first.

Royal Waterloo Hospital for Women and Children.—£3000 towards final stage of extension scheme, including new nurses' accommodation, to be the last £3000 required to enable the extension to be opened free of debt.

Willesden General Hospital.—£3000 towards extension, increasing the number of beds from 78 to 100; to be the last £3000 required to open the whole building free of debt; on the understanding that the balance is raised by the hospital without drawing on general fund cash or investments, and on condition that the new ward block is put in hand by the middle of October, 1925, and that, when the ward block is opened, 8 beds will be reserved for accident cases.

The total grants to December, 1925, were therefore £57,000, and the number of additional beds to be provided 396. The number of beds to be reserved for accident cases totalled 40.

Sir Walter Lawrence, Bart., having seconded, the motion was put and carried.

The Prince of Wales here read a message sent by His Majesty the King, the Patron of the Fund, which was as follows:—

> "The King is glad to hear that the Fund has been able to increase its distribution from £235,000 to £245,000, and that with the extended area of its operations it now makes grants to no fewer than 133 hospitals. His Majesty is grateful to Lord Stuart of Wortley for all he has done as chairman of the Management Committee, and, indeed, ever since the foundation of the Fund, of which he was one of the original honorary secretaries."

Remarks by the Prince of Wales.

Continuing, the Prince of Wales said that the distribution this year covered a wider field than ever before, for the King's Fund area was now 380 square miles instead of 255, while the number of hospitals helped had gone up from 118 to 133. The amount of the ordinary distribution had increased from £235,000 to £245,000, apart from the grants out of the Wells legacies. The combined total was £302,000. The ordinary distribution of £245,000 came from various sources. About two-thirds of it was secured by income from investments under the care of Lord Revelstoke and the Finance Committee. But about £82,000 had to be raised in the year. The annual subscriptions had always been smaller than hoped for, but this year they showed a welcome increase, largely in the form of seven-year agreements, many of them so worded that the subscriber gave the King's Fund the benefit of any income-tax saved by the agreement. The League of Mercy provided, as usual, a large sum, made up of innumerable small ones, while donations again included some of those unexpected gifts without which distribution could not be maintained. For the second year in succession the British Charities Association had entrusted the Fund with the distribution of a large sum. Last year the proportion allocated by the Association to London was £15,000. This year their receipts were greater, owing mainly to a competition organised with the coöperation of the *Daily Mail*, and the amount granted to the King's Fund for the hospitals of London was £20,000.

If, however, the income had increased, the demands on the funds were also growing. There were 15 more hospitals on the list, including 11 brought in by the enlargement of the area, and the expenditure of the hospitals was being continually increased by the discoveries of medical science, and by the provision of additional beds. That people sometimes forget. His Royal Highness hoped that no one would think, because the hospitals had, by a great effort, improved their position, that this was any reason for ceasing to subscribe. For every new extension that was opened, and every new discovery in hospital treatment meant a fresh call for expenditure. Taking extensions alone, the King's Fund, by devoting the Wells legacies largely to this purpose, had been helping to provide 697 additional beds, which would all have to be maintained. The Management Committee went into the whole question of extensions last year at the request of the Voluntary Hospitals Commission. Their conclusion roughly was that, whatever might be the total number of beds required, the immediate need was to expedite the schemes for the provision of the next 2000 beds, after which it would be time enough to face the more distant future. The Commission, in their recent report, accepted this estimate for London, and added another 8000 for the rest of England and Wales. The Distribution Committee had kept in mind the provision of more accident beds. Another 40 would be added with the aid of this year's grants, making, with 53 last year and 20 provided without assistance from the Fund, a total of 113 since the report of the Fund's Ambulance Cases Committee was published. His Royal Highness, in his conclusion, referred to the memorandum on pensions for hospital officers and nurses (vide THE LANCET, Dec. 19th, page 1299), in the preparation of which the Fund had taken part, and to the revision of the revised uniform system of hospital accounts, which the Hospital Economy Committee had now nearly finished. Referring to the year 1926, His Royal Highness said that he had appointed Lord Donoughmore as a successor to Lord Stuart of Wortley, who had found the detailed work of management more than he could continue to undertake. He had also appointed Mr. J. H. Thomas, M.P., a member of the Council in the place of Mr. Frederick Hall, M.P., and had added the names of Dr. Louisa Garrett Anderson and Mr. F. W. J. Jackson, while Dr. Morley Fletcher would become an additional medical member of the Distribution Committee.

The meeting closed with the usual votes of thanks.

WESTMINSTER HOSPITAL.—Mr. Austin Taylor, formerly M.P. for East Toxteth, has been appointed chairman of Westminster Hospital, in succession to the late Sir Edward Pearson. Mr. Taylor has for many years been a member of the House Committee of the Hospital.

PROVISION FOR CRIPPLED CHILDREN.—A movement is on foot to provide a hospital and other treatment for crippled children in Devon and Cornwall, and a site near Exeter has been given anonymously. It is stated that between 500 and 600 children in the area are awaiting treatment.

PROCEEDINGS OF THE ROYAL COMMISSION ON NATIONAL HEALTH INSURANCE.

(*Continued from p. 1248.*)

Evidence as to the Question of Proof of Unemployment.
(App. CII. and Q. 23290–23395.)

Mr. J. F. G. Price, a principal Assistant Secretary of the Ministry of Labour, gave evidence with regard to a suggestion which had been made that insured contributors under the Health Insurance scheme who are "genuinely unemployed" should be enabled to have their Health Insurance contribution cards impressed with a stamp at an employment exchange with a view to being relieved of penalties which would otherwise arise under the Health Insurance scheme because of failure to stamp.

Mr. Price's evidence was to the effect that, while it would be practicable to endorse with a rubber stamp the Health Insurance cards of unemployed workmen, it would dislocate the work of the exchanges and that his Department would prefer to give certificates of unemployment on application when loss of sickness benefit was directly at stake. There would be difficulties in any event with regard to agricultural workers and domestic servants, as these classes were not covered by the Unemployment Insurance scheme.

The examination of this witness was directed in the main to establishing that the automatic record at the time of unemployment would be easier in the long run, but the witness was not prepared to assent to this.

Sir Walter Kinnear's further Evidence.
(Q. 23396–23829.)

The Controller of National Health Insurance, Sir Walter Kinnear, was examined with regard to suggestions which had been put to the Commission on various questions other than those relating to medical benefit. The substance of his replies is given in the following paragraphs. The suggested exclusion of bank clerks and insurance officials who may cease to be insured on passing the income limit at an early age would involve difficult questions of demarcation, and there was no reason to think that the workers themselves desired to be excluded. A better way would be for their societies to provide out of their surpluses for treatment benefits for a limited period after the income limit had been passed.

Many persons belonging to the wage-earning classes as ordinarily understood, but not under contract of service, might well be brought within the Act.

> We might provide for compulsory insurance in the case of employment under a contract for the performance of manual labour for the purposes of a trade or business, and that the person for whose business the work is performed should be deemed to be the employer.
>
> The demand for voluntary insurance has been intensified by the passing of the Pensions Act.

The proposal to drop the manual labour test and determine insurability simply by rate of remuneration—possibly increasing the limit to £300 per annum—was open to objection on many grounds. Manual workers, earning high wages, are not in as stable an economic position as non-manual workers, and cannot be expected themselves to make the same provision for insurance.

> A high rate of remuneration does not necessarily mean continuous employment, and . . . you might find that the docker, who was earning a high rate of remuneration for two or three days in the week, would be cut out of insurance, although his total income may not be very much larger than £250 a year.

With regard to the present age limits of 16 and 70, any reduction of the commencing age limit would be a retrograde step, and there is no widespread demand for it; the limit at the other end becomes 65 with the operation of the new Pensions Act. Insurance will cease at 65, and if a man is insured until then he will be entitled to medical benefit for the rest of his life.

A period during which a person is genuinely out of work and may be receiving unemployment benefit should not be counted against him for the purpose of his qualification for Health Insurance benefits.

> It is indefensible that where under one State scheme a man is getting unemployment benefit because of genuine unemployment, concurrently with the receipt of that benefit he should be piling up arrears with the possibility of reduced sickness benefit under another State scheme.

Many witnesses, particularly those representing Friendly Societies, had suggested that a limit should be placed on the extent to which the standard rates of benefit should be allowed to be increased by way of additional benefit. The Department did not think it desirable to place a statutory limit; the Minister's present powers for approving schemes of additional benefits were considered adequate to meet the case.

The Department considers that it would not be practicable or desirable to merge the Workmen's Compensation scheme in the Health Insurance scheme. Such a system could not be worked in conjunction with a general scheme of insurance based on flat contributions. In any case, the Department considers that it would not be practicable for Approved Societies organised on their present lines to administer workmen's compensation insurance.

The provisions with regard to late notice of incapacity might be made less stringent—e.g., in cases where a member had gone into hospital.

With regard to the control of Approved Societies, further powers were necessary for dealing with minor irregularities, withdrawal of approval being much too drastic a remedy in such cases. Where on investigation general laxity was found a reduction might be made in the amount which a Society should be allowed to expend on administration. The Department has no evidence which suggests that the administration of benefits through Approved Societies is not acceptable to the insured population generally. Indeed, the administration of cash benefits by societies works, on the whole, quite well, and from the audit reports it is to be gathered that the standard of their administration has now reached a high average. The administration of schemes of treatment benefits is still largely in the experimental stage. The marked increase in the amount of money devoted to treatment benefits is accentuating the necessity for the administration of these benefits being coördinated through one local committee in each area.

As to the democratic control of large centralised societies, some improvement might be effected by ensuring notification to members of the general meeting and by facilitating the holding of district meetings, but the extraordinary apathy of the insured persons themselves must be recognised.

The original intention of Section 21 of the 1911 Act was to enable Approved Societies and branches without any question of receiving an equivalent return, to make subscriptions or donations to hospitals or charitable institutions which serve the interests of public health.

> The section is now used by a number of societies for the purpose of providing benefits in the nature of additional benefits to all members, whether qualified to receive additional benefits or not, by paying quite considerable sums in anticipation of surpluses to organisations specially set up to receive such payments. . . .
>
> We think the legislature really intended by "charitable institutions" to refer to hospitals and dispensaries and other institutions which provide on a voluntary basis benefits for the population as a whole, and not organisations purely set up for National Health Insurance.

The number of deposit contributors is steadily diminishing and the Deposit Contributors Fund has gradually become a clearing house for the societies except as regards the comparatively small number of persons who either in principle object to joining societies, or are unable to obtain admission to a society by reason of ill-health. Special provision might be made on lines, suggested by the witness, for giving a more effective insurance to those who had tried to get into a society and had failed, but the Department did not recommend the establishment of a State Society.

It is not considered possible to extend to insured women who cease employment on marriage the ordinary provisions as to a free year's insurance.

BERLIN.

(From our own Correspondent.)

Responsibility of Medical Men in Germany.

A medical man in a country town was recently consulted by a mother because her 5-year-old child had broken its humerus near the elbow. He applied a starch dressing with a splint and told the woman to come back in a week unless the child had pain, in which case she should bring it at once. Although the child complained, was sleepless and feverish, the mother did not bring it up for a week, when it was ascertained that gangrene had set in, and eventually amputation had to be performed. The doctor was prosecuted. In court a local expert, giving evidence for the prosecution, said that the medical man should have examined the dressing on the first or second day instead of telling the mother to come in a week; he would then have ascertained that owing to the swelling of the arm the dressing had become too tight and had caused strangulation. Surgeons of great renown, such as Prof. Sauerbruch, of Munich, however, gave evidence for the defendant, saying that the gangrene was probably caused either by thrombosis or by a compression of the brachial artery by the fracture rather than by the dressing. Prof. Sauerbruch stated that in the out-patient department of his hospital the patients in similar cases were always directed to come in a week and to present themselves at an earlier date only if pain was felt. In his opinion the fault lay with the mother and not with the medical attendant. Notwithstanding this evidence the defendant was found guilty of bodily injury by neglect and fined 600 marks; moreover, an action for damages was brought against him by the mother. This verdict is the more remarkable in that the mother, living rather far from the medical man's residence, and notwithstanding the advice of her neighbours, had declined to come earlier on grounds of economy. The Director of Public Prosecutions, Ober-Reichsanwalt Dr. Ebermayer, discusses the legal position in the case in the *Deutsche Medicinische Wochenschrift*. He says that the term "malpraxis"—Kunstfehler—which is so often used in medical and lay circles is not contained in any of the German laws. Malpraxis may be described as an offence against the generally recognised rules of medical science either by insufficient knowledge or insufficient care. A medical man may be prosecuted for that misdemeanour by the Public Prosecutor and is, moreover, liable to pay civil damages to the injured patient. This is, however, only the case when, according to general experience, he could have foreseen that damage might result from his treatment. The damages he has to pay include the prejudice done by his action to the working strength and to the career of the patient. He is held responsible not only for his own mistakes, but also for those of his assistants. Hospitals may be held responsible for the action of their appointed staffs. A medical man may insure himself against the financial consequences of his mistakes. He may also be prosecuted when he has operated on a patient against his will, even when the operation has been performed lege artis and has been successful.

Medical Service in Prisons.

The defects of the prison medical service in this country have recently aroused attention. A former Minister had been arrested for alleged fraud committed whilst in office, and although cardiac debility had been certified by his private medical attendant, he was kept in prison until his death. Apart from the political side of the matter, it was stated in the course of a Parliamentary inquiry that some time ago the Minister of Justice had instructed the medical officers to give a certificate of unfitness for imprisonment only if there was no danger that the prisoner might escape, and not merely for reasons of health. They were further warned against attaching too much importance to private medical certificates, but it was left to their absolute discretion to advise the judge concerning a release on bail of the prisoner. The Parliamentary Committee further stated that the whole medical service in prisons was very unsatisfactory. There existed no whole-time medical officers for prisons; in the greater cities the law court medical officers and in the country the district medical officers of health had to attend prisoners besides their other numerous duties. In the case quoted above it was ascertained that the medical officer lived at a great distance from the prison and that when informed of the bad condition of the patient he gave his prescriptions by telephone. Before the Parliamentary Committee he gave evidence that the hospital connected with the prison contained 200 beds for which four nurses were appointed. He had on several occasions asked the authorities to appoint a resident medical assistant, since he was quite unable, owing to his other work as an expert in lawsuits, to give the patients the necessary attention; his demand had always been refused. Further evidence proved that as a consequence of the inadequate nursing staff the nurses, to keep the patients quiet, gave them indiscriminately quantities of narcotics, which in the case quoted above led to a fatal issue. The result of the inquiry was that the instructions of the Minister to the medical officers were withdrawn and that the number of the medical as well as of the nursing staff was increased.

Mortality of Insured Medical Men.

Dr. Freudenberg has published an interesting statistical record on the mortality of medical men insured in the Medical Life Insurance Company connected with the Hartmann-Bund. The period covered is from 1919 to 1923 and is compared with a similar record of the Gotha Life Insurance Company for the years of 1829 to 1885. The number of medical men involved is 3940 with 217 deaths. Infectious diseases, especially enteric fever, showed a great diminution compared with the Gotha record, owing to the general improvement of hygiene and the successful fight against infectious diseases. Diseases of the central nervous system have also diminished owing to the more efficient treatment of syphilis, and so have pneumonia and pleurisy. The percentage of malignant growths has undergone no change. It is interesting that the percentage of diseases of the heart and the circulatory organs in medical men has exceeded that of the general population, whilst formerly, according to the Gotha record, the contrary was the case. This is ascribed by the author to the circumstance that during and after the war the scarceness of spirits has produced a decrease in the mortality from cardiac diseases in the general population; on the other hand, in the medical profession deaths from those diseases are due not to an abuse of spirits, but to over-exertion connected with medical practice, which now involves a more strenuous life than it did. The distressed condition of the medical profession is, moreover, illustrated by the fact that of the 217 deaths recorded 16 were due to suicides committed between the ages of 46 and 61 years. Formerly suicides at that age were very rare; the average medical man was, as a rule, then able to retire from practice or at least to limit its scope and to enjoy the rest earned by his former work. Now the great mass of medical men must work until their death, and if unable to do so are likely to end as paupers or suicides.

Opilaçao or the Chagas Disease.

The head of the Brazilian Health Office and of the Hygienic Institute in Rio de Janeiro, Prof. Chagas, who is making a tour of Europe,[1] recently visited Berlin and read before the Berlin Medical Society a paper on the disease called after him, which is a form of trypanosomiasis common in Brazil. Prof. Chagas's paper was translated by his countryman, Dr. Rocho de Lima, of the Hamburg Institute for Tropical Diseases. He explained that the parasite which gives rise to the disease was detected before its clinical features were recognised. Its habitat is the intestines of a bed-bug which is found in native huts. In the night the bug bites men and animals, and in this way the disease is conveyed. The acute form of the disease occurs more particularly in children. Fever is always present, and a characteristic symptom is a swelling of the face. When the parasites in the blood are very numerous the patients nearly always die. If the disease enters a chronic stage the parasites are found not in the blood, but in the heart and in the central nervous system. Prof. Chagas is of opinion that a connexion exists between trypanosomiasis and goitre, which is endemic in Brazil.

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[1] See The Lancet, Nov. 7th, p. 988.

PARIS.

(FROM OUR OWN CORRESPONDENT.)

Vital Statistics for the Third Quarter of 1924.

PROVISIONAL figures for the 90 French départements are compared for the third quarters of 1924 and 1925 by the Minister of Labour as follows :

	1924.	1925.
Marriages	36,095	35,014
Divorces	5,061	4,999
Living births	188,114	190,192
Stillbirths	7,437	7,367
Deaths under 1 year	15,493	17,007
Deaths, 1 year and over	124,228	134,275
Total deaths	139,271	151,282
Excess of births over deaths	48,393	38,910

Vaccination in France in 1924.

In a well-documented report, Dr. L. Camus, director of vaccination at the Academy of Medicine, sets out the story of vaccination and revaccination in France during 1924. Reports from the departments show that obligatory vaccination has been accepted without hesitation except in a few places. Among those who presented themselves voluntarily for revaccination a percentage of 65 of positive results was noted, showing that vaccinal immunity is transient and that it is prudent to renew it from time to time. The percentage of success at primary vaccination was practically 100 per cent. Foreigners have been vaccinated in great number on their entrance into France. At Modane the number was 39,643 ; at Hendaye, 19,773 ; but the organisation has not been so complete at the other frontier stations. Forty-seven cases of small-pox were recorded in 1924. There were two small epidemics, one at Limoges and the other at Carcassonne, due to the sorting of rags. Six deaths were recorded : one at Marseilles, of a seaman who died five days after debarkation, four at Limoges, and one at Carcassonne.

Idiopathic Rise of Temperature.

Dr. Remlinger, director of the Pasteur Institute at Tangier, in a communication to the Academy of Medicine, has described persistent febrile attacks of which searching clinical and biological examination failed to determine the cause. He regards them as idiopathic, arising in subjects of thermal instability as a result of upset of heat regulation. He queries whether climatic factors are not concerned in their production, for in several of the cases, the febrile attacks ceased in France to reappear on returning to Tangier, a town with severe marine climate, the action of which, far from being sedative like the purely marine climate, is particularly bracing. It would be interesting to find out if parallel records of unexplained rises of temperature have been made on the shores of the North Sea or of the English Channel, which have a similar bracing marine climate. It may be that the marine fever of old writers has been denied wrongfully by too fervent disciples of thalassotherapy.

Measles in Paris : The Course of an Epidemic.

Dr. René Martial's account of the evolution in time and space of an epidemic of measles in the environs of Paris is not devoid of interest. The epidemic spread from south to north of the city and was held in check on the west by the Seine and on the east by a line of railway. On the south it was limited by a large tract of waste land and on the north by the Marne. The epidemic progressed slowly, taking nine months to reach from south to north, a distance of only five kilometres. The total number of cases was between 700 and 800 with 12 deaths. A maximum of 159 cases notified during April fell to 23 during June, the school holidays contributing to the disappearance of the epidemic.

A celebration is being organised for the seventy-fifth birthday of Charles Richet, professor of physiology at the Faculté de Médecine, which will also mark the completion of his fiftieth year as teacher and laboratory worker. Subscriptions may be sent to Mr. Pettit, treasurer of the committee of arrangements, 70, rue Jullien, Vanves, Seine.

Dr. Verger and Dr. Mauriac have reported four cases in which oral vaccination against typhoid, adopted preventively, was followed by typhoid. The periods elapsing between the final vaccination and appearance of the typhoid were 24 days, a few hours, eight days, and eight days.

The chairs of bacteriology and of experimental and comparative pathology at the Paris Faculté de Médecine are vacant. New appointments will soon be made.

The Conduct of Medical Practice.

XXV.—COVERING.

OF the duties imposed upon the General Medical Council by the Medical Acts, the disciplinary procedures against members of the profession convicted of unprofessional behaviour are the most difficult of comprehension by the public. And this is regrettable because the actions taken are taken entirely in the public interest. The offences, whose punishment is most frequently commented upon, may be grouped under improper advertisement and improper association with unqualified practitioners, and here the measure of impropriety must be estimated by the Council in accordance with its public duties, but for professional reasons, the force of which will not appeal always to the layman ; and, if a particular case attract the attention of the lay press, it is sadly true that a large number of newspapers take the invariable line of assuming that hardship has been done, while ill-informed persons, often with much ability, take a pleasure in describing the Council as tyrannous. Further, as medical men themselves read daily papers, and meet the promoters of the agitations, the reiterated criticisms of the Council may have their effect upon them, if they are not conversant with the actual facts. When this occurs immediately the criticisms of the Council become more bitter, because it appears that the professional standards employed to protect the public do not give satisfaction to professional men ; in short, those who regard the maintenance of professional standards as inimical to the public welfare view with satisfaction what they regard as a division of the medical forces.

WHAT IS COVERING ?

While far more sympathy is always manifested by the lay press for the medical man who is removed from the professional roll for advertisement, it occasionally happens that the circumstances where a practitioner loses his professional status for association with unqualified healers attracts public attention. This has happened, for example, in the case of Dr. Axham, because the unqualified man with whom he entered into intimate relations has received a knighthood while Dr. Axham's punishment for having entered upon those relations has not been relaxed. If, however, the story is considered from the beginning, it will be seen, first, that the Council had little or no option when they removed Dr. Axham's name from the Register, and secondly, that the method of restoration does not depend primarily upon the Council. Under the Medical Act of 1858, the Council is enjoined, at its discretion, to delete from the official roll the names of medical men whose conduct in professional respect is derogatory to accepted standards. To ensure that medical men shall not err through ignorance, the Council issues warnings, and among these one has appeared pointing out that association by a qualified medical man in medical practice with an unqualified person would render the medical man subject to penalty. Dr. Axham was associated in practice with Sir Herbert Barker—then Mr. Barker—who treated patients without possessing statutory medical qualifications, and the association was not denied. The circumstances were brought before the General Medical Council by the Medical Defence Union, and the Council finding the offence proven—it was not denied—decided to remove Dr. Axham's name from the Register unless he terminated his arrangement with the unqualified man. Dr. Axham then preferred to maintain the existing position, but he is now anxious to re-obtain registration. Being of advanced age, there is no doubt that he is no longer committing the offence for which he had to answer; the position of the Council, however, is that only qualified persons can be entered on the Register. Now Dr. Axham has lost his qualifications, for his diplomas were taken away from him by the Royal Corporations which had previously granted them in response to examinations. Unless and until the diplomas are restored the Council has not the power to act in the way it is insisted upon in some quarters that it should. It can be understood readily enough that this point might not be clear to the laymen who have attempted to advance the cause of Dr. Axham by abuse of the General Medical Council, but it is a little surprising to find medical men equally ill-informed as to the Medical Acts and as to the constitutional position and duties of the General Medical Council. On the general need of action by the disciplinary body of the profession against covering there cannot be two opinions, for if a man who is not qualified can practise as a doctor through association with one who is qualified, the Register ceases to protect the public against irregular practice. Again, to the question of whether a particular unqualified person can have exceptions made in his favour there can be but one answer—any exception would frustrate the whole of disciplinary procedure.

Ancillary Medicine.

Medical men who are careful to help in the maintenance of professional standards, and who are rightly jealous of the privileges conferred upon them in return for a strenuous and lengthy training, have many of them recognised, and recently with increasing force, that there are certain quasi-medical services, ancillary to scientific medicine, which are rendered properly by those without medical qualifications. The public can take advantage of such services, if that is desired, in a way that is of the greatest use to them, if the services are given upon medical advice as the need arises. There is then no doubt that the public obtains the assistance in response to medical advice, persons who do not need the particular treatment are not mulcted of fees, cures for non-existent conditions are not bruited abroad, specifics for cancer are not made the medium of false hopes, and lastly real benefit is obtained through the rightful exercise of special attainments.

Correspondence.

"Audi alteram partem."

THE EXTRINSIC ORIGIN OF CANCER.

To the Editor of THE LANCET.

SIR,—I have been greatly interested in Prof. Blair Bell's noteworthy paper on the Specific Character of Malignant Neoplasia, published in your issue of Nov. 14th. I believe he has made a contribution to our knowledge of cancer that will prove of very great value.

At the Memorial Hospital in 1915, following the lead of Loeb of St. Louis, we made an extensive experimental study of the effects of colloidal copper upon various types of malignant disease. However, the effects were so slight that we abandoned the method after several months' trial. Evidently Prof. Bell has proved that the inhibitory action of colloidal lead is much more marked than that of colloidal copper. His striking success in a considerable number of cases is of the utmost interest and importance. If these successful results prove permanent, as seems to be true in a few cases at least, and the method can be carried out without too high a mortality, we shall have added to our present very limited means of controlling cancer the only systemic method of attacking malignant tumours—with the exception of the administration of the mixed toxins of erysipelas and *Bacillus prodigiosus*, the value of which is restricted chiefly to sarcoma.

The larger part of Prof. Bell's paper is devoted to a discussion of the nature of cancer which, he believes, is far more important than a study of the specific cause of the disease. To quote him: "It is the result rather than the cause, as I hope to show, that is important, for undoubtedly malignant neoplasia is a specific process, but that is not to say that because a process is specific the cause must also be." He believes that the results of his method of treatment with colloidal lead strongly support, if they do not actually prove, his theory of the cause of cancer—i.e., that "malignant neoplasia in the human subject is a biological atavism," or, in other words, that the disease is due to intrinsic causes.

I do not believe that the rapidly accumulating evidence in favour of the extrinsic origin of cancer that has been presented within the last year by Glover, of Toronto and New York, by Young, of Edinburgh, by Nuzum, of Chicago, and last and most important, perhaps, of all, by Gye and Barnard, of London, can be so easily ignored or cast aside. The clinical evidence in favour of the extrinsic origin of cancer is, I believe, even stronger than the laboratory evidence. This clinical evidence was outlined at the annual meeting of the American College of Surgeons in October, 1924, in a symposium devoted to a discussion of Nuzum's paper.

I believe that Prof. Bell's success with the colloidal-lead method instead of supporting his view that cancer is of intrinsic origin actually furnishes another and very strong link in the chain of evidence in favour of the extrinsic origin of cancer. Assuming malignant tumours to be of extrinsic origin, or due to some micro-organism or virus, it would be the most natural thing to expect such micro-organism or virus to be influenced by chemical changes in the body fluids or by some chemical substance introduced by intravenous injection. We could ask for no better analogy than the effect upon syphilitic tumours caused by the introduction of salvarsan.

I can find nothing in Prof. Bell's experiments or results to confirm the belief expressed by himself that "causes are as nothing in comparison with the importance of the realisation that malignant neoplasia is a specific process of the nature, and subject to the control I have described."

Whatever be the final solution of the great issue, whether the theory of the extrinsic or intrinsic origin of cancer be the correct one, we should do nothing to discourage further research upon the problem; for the greatest hope of ever controlling the disease or of lowering its steadily increasing mortality rests upon the discovery of a specific cause.

I am, Sir, yours faithfully,
New York, Dec. 5th, 1925. WILLIAM B. COLEY.

PROFESSIONAL CRITICISM OF THE GENERAL MEDICAL COUNCIL.

To the Editor of THE LANCET.

SIR,—The very interesting leading article in your last issue deals adequately enough with public misapprehensions as to the constitution and functions of the General Medical Council, but, I would venture to suggest, fails to appreciate the whole of the professional case against this tribunal. Possibly you had intended to deal with these on another occasion, but in any case I should be glad if you would permit me a few remarks on the subject.

"It is not enough," you say, "that justice should be done; it is essential that it should seem to be done." It is very difficult from the information supplied by the medical press to form any definite view as to whether justice has or has not been done. In the first place there is a complete absence of that valuable précis—the judge's summing up. The charge is stated to be proved—i.e. the defendant is found guilty of infamous conduct in a professional respect. But no information is available as to exactly which of the alleged actions can be regarded as satisfactorily established. For example, was Dr. Lloyd at fault in permitting publication of his views (if he did so) or in accepting patients directed to him in this manner (if he did so, for none but the members of the G.M.C. know what facts were considered proved) or did the conjunction of the two create the offence? Secondly, we are never told what the penalty is intended to be—erasure of a name for a few months, or years, or for ever. Many members of the profession will be surprised to find restored to the Register the name of a gentleman who seems to have deliberately courted expulsion and who has not, so far as any one of your general readers can be aware, modified his attitude or purged his offence.

Those acquainted with the actual procedure of trials know that the mere physical circumstances and general atmosphere impose a definite hardship. I have commented elsewhere on the jury's letter-writing habits and would add that, if the jury must remain at 40 or thereabouts, it would be the barest justice to so arrange them that the defendant and his counsel might have them all properly in view. Nor is it desirable that counsel should be obliged to pause from time to time in his remarks until he may have the attention of the court—as certainly happens now.

It is sometimes said and thought that the G.M.C. is both accuser and judge. There is not lacking some ground for this misapprehension. His Majesty's judges administer a law made by others, the G.M.C. administers a law made by itself—the law of warning notices. This law is of a very general character and it is difficult for a defendant to argue that he has not infringed a law of whose detailed implications he cannot well be aware. Indeed, it may well happen that he will not learn the law applicable to his case until he has already been convicted, and he cannot altogether be blamed if he feels that the law may have been made to fit his case—especially if that case be some exposition of the modern art of advertising not hitherto brought to the notice of the G.M.C. And anything approaching an atmosphere of informality will certainly much increase any feeling of grievance which he may experience.

Then, again, it is known to those who have considered the matter that the G.M.C. may have great difficulty in ensuring that proper cases be brought before it. The Registrar receives from members of the profession press cuttings and other information. He cannot bring cases before the G.M.C. unless someone will prosecute. Potential prosecutors are few and willing prosecutors fewer still. Yet the facts brought to his notice and perhaps to his alone may clearly call for action. What is he to do? What in fact does he do? I will not answer this question, but I think it will be seen that prosecutor and judge may be forced into a juxtaposition very disagreeable to both of them.

This difficulty of a prosecutor sometimes seems to lead to a rather curious selection of cases. For example, where a doctor has appeared as co-respondent in a divorce case, it is often possible for a husband so inclined to secure his appearance before the G.M.C. On the other hand, if the husband does not know what is possible or is disinclined for action, the erring doctor may continue in practice and on the Register. The crime may be the same, but whether just retribution shall follow depends on chance and not on the G.M.C. This, I suggest, inevitably detracts from the dignity and status of that tribunal.

Finally, I would draw attention to the very small representation on the jury of those who can be considered peers of the accused. Those who experience in their daily lives the many difficulties and complexities of general practice are in a small minority. Yet, if professional standards of what is infamous are to adapt themselves to changing times, it is these very persons who are best able to judge of what adaptations are properly admissible. The majority of the G.M.C. cannot so easily judge from the standpoint of a life which they have never shared. A certain loss of touch with realities seems to be shown by the warning notice and other pronouncements about certificates. National Health Insurance is so administered that perhaps the majority of practitioners give with considerable frequency certificates which, although false, seem to be necessary if patients are to receive the benefits due. There is also a frequent certificate which requires the doctor to certify that he has seen all the children of so-and-so alive on this date. It may be that one of the children is not at home; it is seldom that the children are produced for inspection. Every circumstance in both cases conspires to prompt the doctor to an action which, in 99·9 per cent. of cases, is no more fraudulent or unethical than the subscription of "Yours sincerely" to an entire stranger. The G.M.C. does not seem to be aware of this particular source of trouble in medical practice. It is very prevalent and seems to increase. One would wish to see some sign that the distinction between technical inaccuracy and fraud or carelessness was better appreciated.

I must apologise for the length of this letter, but the matter is one of great importance to the profession. It is very necessary that the profession should feel confident in the G.M.C. I am less concerned about the public at the moment, the case for the public would follow different lines. It will be seen that there is a good deal which might be remedied without any alteration of the law. I do not impute any blame to the individuals who compose the G.M.C. except in so far as they have permitted a regrettable informality where a man's livelihood is at stake. But I and many others will be justified in imputing blame if we feel that no attempt is made to meet honest criticisms, and it is to avoid that unwanted justification that I have written at some length.

I am, Sir, yours faithfully,
Sevenoaks, Kent, Dec. 18th, 1925. GORDON WARD.

AN APPEAL FOR HUMAN EMBRYOS.

To the Editor of THE LANCET.

SIR,—We are in process of forming here a collection of serial sections of human embryos which will be available for study by all competent investigators. No reference collection such as we contemplate exists anywhere in England. It can only be got together through the active coöperation of medical men in practice, and we accordingly appeal to them for aid in the collection of the material. Year by year hundreds of specimens are wasted simply because the medical men into whose hands they fall do not realise that there is any demand for them, or that they are of value for embryological purposes. Our knowledge of human development and of the processes and conditions that result in abnormal development is still very incomplete, and it is only by the study of properly preserved specimens that the blanks in our knowledge can be filled up. Abundant human material of the kind we want is really available, and all that we ask is that such specimens as may from time to time come into the hands of practitioners should be preserved and sent to us, together with such clinical data as may be available.

We wish particularly: (1) *Embryos* passed in abortion, together with the membranes and decidua; where no embryo is apparent, the decidual fragments should be carefully preserved. (2) *Tubal pregnancies*, if possible unopened. (3) *Pregnancies in utero*, where the entire uterus is removed for surgical reasons; in such cases, the uterus should be opened by a median incision along the anterior wall and should then be placed in a large vessel filled with 10 per cent. formalin. (4) Under favourable conditions, the *uterus* and *ovaries* from P.M. subjects. (5) *Curettings* from cases where one or more periods have been missed. (6) *Stillborns*, particularly abnormal subjects.

Preservation of Specimens.—The most convenient preserving fluid is 10 per cent. formalin (ordinary formalin, 1 part, water or preferably normal saline, 9 parts). It is essential that specimens should be put into *plenty* of the formalin solution *as soon as possible* after they are obtained and that the solution should be changed for fresh after 24 hours. When forwarding the specimen, the bottle should be completely filled with the fluid; this prevents damage to the specimen through shaking.

We are prepared to send suitable bottles filled with preserving fluid, in containers for posting, on receipt of a post-card, or when the specimen is large, to arrange for its collection in the London area. The clinical data relating to the specimen are of great value and should be sent with it. We will send the practitioner a short report immediately on receipt of the specimen, and later on a more detailed report should it be desired. It is only by enlisting the help of practitioners in preserving such specimens as turn up in practice that we can hope to build up a really representative collection of human embryological material.

Specimens should be sent to the undersigned, Department of Embryology, Institute of Anatomy, University College, Gower-street, London, W.C. 1.

I am, Sir, yours faithfully,

Jas. P. Hill,

Dec. 17th, 1925. Professor of Embryology.

MASSAGE OF THE MIDDLE EAR.

To the Editor of The Lancet.

Sir,—In reference to your annotation upon Massage in the Treatment of Middle-Ear Deafness, it may interest your readers to know that I have, during the past 30 years, made use of this treatment in many forms, from the primitive Siegle speculum and its off-shoot the Delstanche otomasseur to various kinds of instruments worked by hand, water-power, or electric motor. As you very wisely point out, their effect is mostly upon the more mobile parts of the membrane and ossicles, and they have little, if any, influence upon adhesions or upon ankylosis of the ossicles of long standing. Some years ago I tried pneumatic otomassage in selected cases after mobilisation of the malleus, or following such operations as exploratory tympanotomy with severance of adhesions. The results were disappointing. In no case have I ever found the pneumomasseur in any form to have other than transient effects, and I am of opinion that when this temporary improvement occurred it was due to the equally transient hyperæmia induced.

Judging by a recent symposium in the United States, however, it would appear that most otologists are agreed that vibratory massage of some sort offers the best chance in the treatment of chronic middle-ear deafness. The whole question lies in the nature of the massage to be employed. With the instruments referred to the movements are too coarse to be of any real value; what is required is a movement of extremely short wave-length. The only instrument that I know which furnishes such a movement is the electrophonoïde of Dr. Zünd-Burguet. This method of treatment, so unfairly criticised by British otologists until G. C. Cathcart's paper appeared in your columns,[1] is giving excellent results in my hands. It is a method of auditory massage which is eminently adapted to the ear because it is performed by sound waves, which are obviously the proper physiological stimulant for the hearing organ. As Dr. Zünd-Burguet points out in his "Principes d'Anacousie," the method is both pedagogic and therapeutic. On the one hand, it teaches the patient to listen and to hear; on the other, by its local action in causing hyperæmia, it stimulates the tympanic mucosa and intratympanic muscles, and causes a regeneration of tissues, analogous to the action of massage upon a wasted, stiffened limb, whereby the ossicular joints are freed and adhesions stretched. In one case recently a young lady, whose hearing was reduced to R. = 6 in. and L. = 0 for the whisper and R. = 4 ft. and L. = 1 ft. for the ordinary voice, and whose case was pronounced to be hopeless by two well-known provincial otologists, improved after 12 sittings to R. = 4 ft., L. = 1 ft. for the whisper and over 20 ft. R. and L. for the low voice. After the full 30 sittings her paracusis Willisii disappeared, and she could hear everything in a theatre from the middle of the stalls.

I have no experience of Dr. Braun's new method mentioned in your annotation, but I would venture to suggest that the Zünd-Burguet method is superior and far less uncomfortable than massage of the nasopharynx and Eustachian tubes by wool-tipped probes.

I am, Sir, yours faithfully,

Macleod Yearsley.

Wimpole-street, W., Dec. 19th, 1925.

The Services.

ROYAL ARMY MEDICAL CORPS.

MILITIA.

Maj. (Bt. Lt.-Col.) W. H. G. H. Best retires on attaining the age limit, and retains his present rank.

TERRITORIAL ARMY.

General List.—Lt.-Col. (Bt.-Col.) F. Hawthorn, having attained the age limit, is retired, and retains his rank with permission to wear the prescribed uniform.

Lt.-Col. J. Barkley and Majs. L. A. Mackenzie, A. Coleridge, W. S. Richardson, and L. J. E. McHugh, having attained the age limit, relinquish their commns. and retain their rank.

General Hospitals.—Maj. C. A. S. Ridout, having attained the age limit, relinquishes his commn. and retains his rank.

Supernumerary for Service with the O.T.C.—Maj. W. J. A. Laird (Res. of Off.) to be Maj. and to command the Med. Unit, Belfast University Contingent Senr. Div. O.T.C.

TERRITORIAL FORCE.

General List.—Maj. (Prov.) H. Forrest is confirmed in his rank.

ROYAL AIR FORCE.

E. A. Aslett and H. M. Levy are granted short service commissions as Flying Officers, for three years on the active list.

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[1] The Lancet, 1925, i., 968.

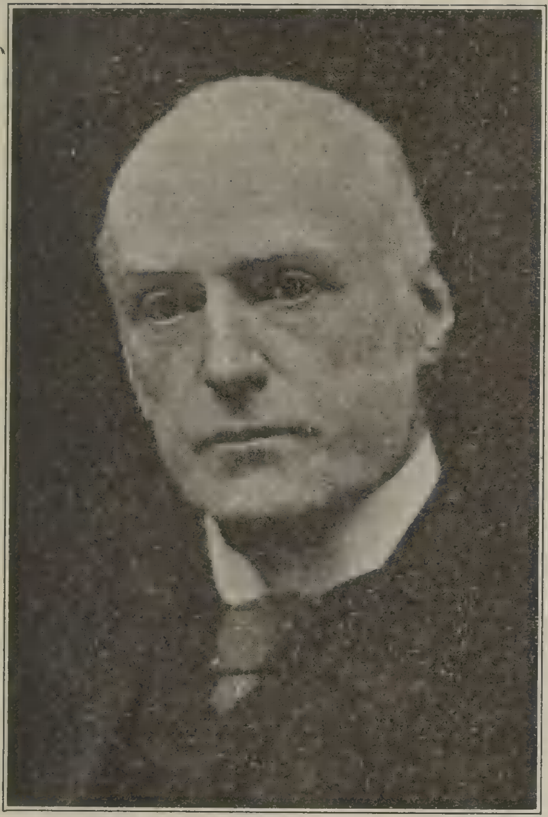
Kingston-on-Thames Hospital.—The board of guardians have decided to proceed with a scheme for the extension of Kingston and District Hospital and the erection of a nurses' home, at an estimated cost of £100,000.

Obituary.

SIR RICHARD DOUGLAS POWELL, BT., M.D., F.R.C.P. LOND., K.C.V.O.,

PHYSICIAN-IN-ORDINARY TO H.M. THE KING; CONSULTING PHYSICIAN TO THE MIDDLESEX AND BROMPTON HOSPITALS.

WE announced last week the death after a short illness of Sir Richard Douglas Powell, which occurred on Dec. 15th at his residence in London in the eighty-fourth year of his age. He had for many years been an outstanding and deeply respected leader of the medical profession. His broad outlook on medicine in general, his attainments in special clinical fields, and his sincere regard for the best ideals before the profession which he adorned, had made of him in the medical world, as in the world without, a veritable type of the wise consulting physician.



SIR RICHARD DOUGLAS POWELL.

Richard Douglas Powell was born at Walthamstow in 1842, being the second but only surviving son of Captain Scott Powell, an officer in the Royal Welsh Fusiliers. Educated privately, he received his medical training at University College, London, and graduated in the University of London just 60 years ago as M.B., proceeding to the M.D., which he took with honours in the following year. Quite shortly afterwards he was appointed assistant physician to the Brompton Hospital for Consumption and Diseases of the Chest, and as active member of the staff and consulting physician he served the hospital for 57 years.

His first position on the staff of a London general hospital was at Charing Cross, where he was elected assistant physician and lecturer on materia medica in 1871, a post which he occupied until appointed in 1878 assistant physician at Middlesex Hospital. Here he became full physician three years later, and during 30 years was a mainstay of the scientific, educational, and charitable activities of the institution.

In three different directions throughout his long professional life Douglas Powell occupied a prominent position to the satisfaction of all who worked with or under him. He was a great Court physician; he was a great President of the Royal College of Physicians of London, and he was a great clinician. His introduction to the Court was due to the high opinion which Sir William Jenner had formed of him in the early stages of his career when he was filling the junior posts at University College Hospital. The connexion between his distinguished master and Powell was an intimate one, and led to his appointment as physician-in-ordinary to Queen Victoria at a comparatively early stage in his professional career. He became at once an acceptable figure at Court, where no doubt his distinguished and graceful personality were appreciated in common with his wide range of ability. He attended Queen Victoria in her last illness, and subsequently was physician-in-ordinary successively to King Edward VII. and to the present King.

His connexion with the Royal College of Physicians of London began with the Membership, which he took in 1867. He was elected Fellow in 1873, served as Senior Censor in 1902, and as President for five years—namely, 1905 to 1910. He is on all accounts allowed to have been a successful President, maintaining the dignity of the office, and sparing no pains to insure that the College should take an intimate part in professional progress.

As a physician he was a leading figure not only in London, but in all medical society at home and abroad for more than half a century. His early association with Brompton Hospital dictated the fact that it was as a specialist in pulmonary and cardiac conditions that he became most widely known, but throughout the greater part of his professional life his work at the Middlesex Hospital enabled him to maintain legitimately the position of an all-round man, and to look upon the large and particular branches in which he may be said to have specialised as a chapter, if a very large and far-reaching one, in the general story of pathology. It goes without saying, therefore, that he spared no pains to keep abreast of medical technique and medical literature. His work upon the physics of the chest, which appeared as long ago as 1875 in the Transactions of the Medical and Chirurgical Society, showed both the general and special knowledge which he had already acquired.

Thus Douglas Powell, both in personality and in achievement, looms large in the medical history of his generation, and there will be none to cavil at the high measure of success he secured. At a time when specialism was less the rule than at present, he was at once an accomplished general physician and a specialist of world-wide renown. His long association with the Brompton Hospital probably served to determine his special bent towards the study of diseases of the lungs and heart. His was an eminently practical turn of mind, and it is therefore not surprising that his interest was more especially directed to the clinical features of these diseases and particularly to their treatment. His well-known "Text-book of Diseases of the Lungs," was one of the earlier special monographs. That it has fulfilled a useful purpose is shown by the fact that it has reached a sixth edition, in the preparation of which Sir Percival H.-S. Hartley has collaborated. It is worthy of note that the careful clinical and pathological study of disease by the generation of physicians of which he was so distinguished a representative rendered possible the modern advances which have been achieved by instrumental and experimental methods and by the more scientific means of investigation now available.

A mere enumeration of the more important of his contributions to the study of diseases of the lungs and heart affords a striking testimony not only to his industry, but to his profound acumen in these matters.

His earliest communication to the Royal Medical and Chirurgical Society, on Some Effects of Lung Elasticity in Health and Disease, discussed the problems of the negative pressure in the pleural space and its effects in a way which indicate the new purview of diagnosis. He subsequently read papers or published notes on pulmonary tuberculosis, pleuritic effusion, pneumothorax, and hæmoptysis. He delivered the Lumleian lectures before the Royal College of Physicians on Principles which Govern Treatment in Diseases and Disorders of the Heart. These lectures were published in THE LANCET and are a model of what such disquisitions should be—they were clear, informatory, based on constructive work and not on routine.[1] In his Harvein Oration, delivered at the same College in 1914, he dealt with the principal Advances in Knowledge Regarding the Circulation and Attributes of the Blood since Harvey's Time. The oration was at once simple, eloquent, and learned; the résumé of modern knowledge as to the influence of the internal secretions and the defensive attitude of the blood, with which it closed, being a model of the attitude which a great healer should take towards progressive developments in his science and art. Other subjects which engaged his special attention and interest were angina pectoris, aneurysm of the aorta, and mediastinal tumour, on all of which he contributed articles to "Reynolds's System of Medicine"; in the last his summary of the pressure signs of aneurysm was singularly clear and practical. His style was cultured and polished, without being pedantic. His clinical lectures were always worth listening to. They often included descriptions of cases rather in the manner of Sir Thomas Watson or Trousseau, with admirable practical hints in regard to treatment. Since the war he delivered an emeritus lecture at the Middlesex Hospital on the Problems of Blood Pressure, which showed that he retained his keen interest in the problems of diseases, and that he was still keeping in touch with the modern advances.

His tenure of the post of the President of the Medical and Chirurgical Society was marked by the successful carrying out of the scheme for amalgamation of the metropolitan societies which had been ventilated 12 years previously by Sir John MacAlister, with Sir Andrew Clark behind the movement. The scheme received the approval of a large group of leaders of the medical profession within and without the metropolis, but the interests involved were not always identical, and there is no doubt that the universal respect in which Douglas Powell was held, and the tactful manner in which any negotiations which fell to his share were carried out, counted enormously in the institution of the Royal Society of Medicine.

We have received a tribute to him from one who had known him for over 30 years, and been in close association with much of his work. The letter runs: "Sir Richard Douglas Powell was a very reserved man, but to one who was privileged to work with him and for him for many years he revealed himself as one of the most kind-hearted and generous of men as well as the dignified and courteous personality that all could observe. His courtesy was of deed as well as of word, and was the expression of a beautiful and unselfish character, and not a veneer. His kind-heartedness was displayed in his readiness to help any who asked his advice, and he entered into their difficulties in such a way that his counsel became of value because so well directed. At the same time his consideration for those who assisted him was marked; indeed, he always seemed surprised and even grateful for the smallest service rendered to himself. His watchwords were self-constraint and self-control, and he acted up to his principles. Good-tempered, he kept his temper completely under control save where occasionally it flashed out in scorn of mean or self-interested actions, or of slackness, of which he was quite intolerant. For the rest his knowledge of human nature and its foibles was so wide that his sympathy was always extended to those who were doing their best, whatever the accomplishment; and though he could, and would, rebuke where he considered this was deserved, the rebuke would be so tempered as to stimulate rather than to humiliate. His strong character made it impossible to turn him from a course of action while he was convinced that it was the right one, an aspect of him which was better known to his intimate circle than without, where his graciousness of manner obscured to superficial observation his determination."

To him honours came in profusion. His Court appointments have been mentioned. He was an Hon. D.Sc. in the University of Oxford, an Hon. M.D. in the University of Dublin and the Royal University of Ireland, Aberdeen and Birmingham Universities gave him an LL.D., and he was an Hon. F.R.C.P. Irel. He was created a baronet in 1897 and appointed K.C.V.O. in 1901.

Sir Richard Douglas Powell married in 1873 the second daughter of the late Sir John Bennett, by whom he had three sons and two daughters. He is succeeded in the baronetcy by his eldest and only surviving son, Lt.-Col. Douglas Powell, C.B.E., the two other sons having given their lives for their country, the second son being killed in action in the South African War and the youngest one dying of wounds in Mesopotamia in 1916. The tragedies tried the father deeply, but his patriotic courage suppressed resolutely his deep sufferings. He married secondly in 1917, Edith Mary, daughter of the late Mr. Henry Wood, of Cleveland-square, who survives him, and to whom we tender every sympathy.

EDWARD FRANCIS PALGRAVE, M.R.C.S. ENG.

Dr. E. F. Palgrave, who died in London on Dec. 13th, was son of the late William Gifford Palgrave, of the Foreign Office Service, and was born at St. Thomas's Island in 1875. He was a nephew of Francis T. Palgrave, professor of poetry at Oxford, of Sir Reginald Palgrave, Clerk to the House of Commons, and of Sir Inglis Palgrave, the well-known economist. He was educated at Clifton where he gained an entrance exhibition, entered St. Bartholomew's in 1892, qualified in 1897, and was appointed by Sir William Church as his house physician. After passing through the Tropical School of Medicine, he practised at Sunbury, Middlesex, for six years, after which he obtained an appointment in the school medical service of Middlesex, where he remained for four years. In 1912 he was appointed to the school medical service of the London County Council, where his ability soon manifested itself; while pursuing his routine duties he made several reports which attracted attention, in particular dealing with the causes of malnutrition in school-children.

Dr. Palgrave joined the Royal Army Medical Corps in 1914 and was put in charge of the Officers' Hospital at Havre for 12 months when, owing to the absence of many senior officers, the need for some one with exceptional clinical knowledge was experienced at the headquarters of the London County Council, and he was withdrawn from the school medical service in order to work at the head office. New administrative duties allotted by statute to the Council necessitated an increase in senior officers, and in 1920 Dr. Palgrave was promoted to the office of divisional medical officer. In this capacity he directed the administration of the Midwives Act and the sections of the Children Act dealing with children below school age. He also took a large share in the new and responsible work connected with the public provision for the treatment of venereal diseases.

For the past 18 months his health had been visibly failing, nevertheless he made heroic efforts to carry on his duties. "Palgrave's geniality and unselfishness," writes one of his colleagues, "had endeared him to all who worked with him, while his clinical acumen and administrative ability had earned their deep admiration and respect."

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[1] THE LANCET, 1898, vol. i.

Parliamentary Intelligence.

NOTES ON CURRENT TOPICS.

Bethlem Hospital Bill.

ON Wednesday, Dec. 16th, a motion was agreed to in the House of Commons carrying over to next session the Bethlem Hospital Bill. Mr. J. F. **HOPE**, Chairman of Committees, stated that the Bill had been objected to from time to time, and he had adjourned it in the hope that a settlement might be arrived at. No settlement had yet been reached, but he had every hope that if the measure was carried over to next session a settlement might be arrived at. On Friday, Dec. 18th, in the House of Lords a similar order was agreed to.

Asylum Officers' Superannuation.

Mr. **TAYLOR** presented a Bill in the House of Commons on Friday, Dec. 18th, to amend the Asylum Officers' Superannuation Act, 1909, which was read a first time.

HOUSE OF COMMONS.

WEDNESDAY, DEC. 16TH.

Vaccination Exemptions.

Mr. **GROVES** asked the Minister of Health whether, in view of the fact that the ratio of exemptions from vaccination was progressively increasing and the ratio of small-pox deaths correspondingly decreasing, he would consider legislation to amend the obligatory vaccination laws and put them in such a way that persons who themselves desired or desired their children to be vaccinated should apply for such publicly assisted service, not, as at present, that those who desired to be exempt must apply.—Mr. N. **CHAMBERLAIN** replied: I am not prepared at present to consider the question of legislation on the lines suggested by the hon. Member.

Deaths from Small-pox.

Mr. **GROVES** asked the Minister of Health if he would present statistics to show the number of persons in England and Wales who, in the ten years ending with 1921, died of small-pox although admittedly successfully vaccinated; the number of persons who died of small-pox in the same period and were classified as not vaccinated; the number classified as doubtful who died of small-pox; and the percentage of births vaccinated in that period of ten years.—Mr. N. **CHAMBERLAIN** replied: The records in the possession of my department show that, of the 122 persons who died of small-pox during the ten years ending with 1921, 43 had been vaccinated, 59 had not been vaccinated prior to exposure to infection, and in 20 instances the vaccinal condition was doubtful. The 43 vaccinated cases included no person under the age of 12, 4 persons between the ages of 12 and 25, and 4 between the ages of 25 and 35, the remainder being in each case over the age of 35. The records show that only 4 of the vaccinated cases had been revaccinated, the ages of these persons being 25, 35, 58, and 64 respectively. Of the 59 unvaccinated persons, 26 were under the age of 12, 18 between the ages of 12 and 25, 9 between the ages of 25 and 35, and 6 over the age of 35. The percentage of births vaccinated during the period in question was 43·5.

Sanatorium Treatment for Pensioners.

Mr. **PIELOU** asked the Minister of Pensions the amounts spent by his department upon sanatorium treatment for pensioners suffering from tuberculosis during the last five years.—Major **TRYON** replied: The aggregate expenditure of my department upon the treatment of pensioners in sanatoriums during the five years ending March 31st, 1925, was approximately £2,500,000.

Duties of D.C.M.S.

Mr. **ROBINSON** asked the Minister of Pensions what area deputy commissioners of medical services were responsible for more than one area as constituted under the War Pension Act of 1921, and in what town was the office of the area deputy commissioner of medical services situated; and what were the areas for which area deputy commissioner of medical services was responsible.—Major **TRYON** replied: Each of the deputy commissioners of medical services is responsible for more than one area with the exception of the deputy commissioners stationed at Aberdeen, Gloucester, Leicester, Belfast, and Bristol.

Final Pension Awards.

Mr. **DAVID GRENFELL** asked the Minister of Pensions whether, seeing that of 6239 appeals heard against final awards made by the Ministry 3381 were successful, he would take steps to ensure that more careful consideration of the men's disabilities was given by the medical final awards board and awarding officers, so that men were not under assessed and/or their pensions terminated without sufficient cause.—Major **TRYON** replied: I would remind the hon. Member that about half the cases in which the appeal is regarded as technically successful are cases where the Ministry's assessment was not modified, but finality of the award was for the time being set aside for further consideration. The existing instructions of the Ministry provide for the fullest consideration of all cases and a final award is not made where the prognosis of the case is doubtful or there is prospect of deterioration.

Pensioners and Chronic Chest Trouble.

Mr. **RADFORD** asked the Minister of Pensions the approximate number of ex-Service men in receipt of pension for chronic chest trouble; and would he consider the advisability of providing establishments for such cases in parts of the country with a salubrious climate where these men, particularly those from the industrial areas, might proceed for a period during the winter months when they suffered most severely from their home climatic conditions.—Major **TRYON** replied: About 59,000 men are in receipt of pension in respect of a disablement arising from one or other form of chest affection. Rather more than half the total number are cases of pulmonary tuberculosis, for whom treatment is by statute the concern of the local health authority acting under the Ministry of Health. As regards sanatorium provision for these cases, I understand that the climatic factor is always considered. Cases, however, of chest affection other than tuberculosis are, where necessary, provided for in Ministry institutions situated in various parts of the country, and in the event of a change of climate being essential in any individual case transfer from one hospital to another can be effected. The results of treatment of these cases in Ministry institutions do not, I am advised, indicate any need for the setting up of further institutions in other localities.

School-children and Dental Treatment.

Colonel **DAY** asked the President of the Board of Education whether his attention had been drawn to the fact that of 2,000,000 school-children inspected in 1924, 67 per cent. of whom were found to be in need of dental treatment, only 55 per cent. received such treatment; and what action was contemplated in order to deal with those not receiving dental care.—Lord E. **PERCY** replied: I assume that the hon. Member refers to the statement on p. 66 of the report of the Board's chief medical officer for the year 1924. As regards the second part of the question, this is one of the matters that local authorities have doubtless been considering in connexion with their programmes.

Ex-Service Men and Tuberculosis.

Mr. **PIELOU** asked the Minister of Health whether, in view of the fact that over 21,000 ex-Service men had died from tuberculosis as a result of their war service, he intended to adopt the recommendation of the Inter-departmental Committee of 1919 and expend the amount suggested for the purpose of increasing village settlements throughout the country.—Mr. N. **CHAMBERLAIN** replied: In the present financial circumstance of the country I could not contemplate expenditure on the scale which would be required to carry out the recommendation referred to by my hon. friend. I may, however, say that extensions and improvements of the two existing village settlements are now being carried out with Exchequer assistance and I shall not lose sight of the matter.

Value of Primary Vaccination.

Mr. **GROVES** asked the Minister of Health whether he could state the considered judgment of the medical advisers of his department with regard to the utility or otherwise of primary vaccination; and whether he contemplated any measures for the obligation to revaccinate quinquennially.—Mr. N. **CHAMBERLAIN** replied: The answer to the first part of the question is that, in the judgment of my medical advisers, primary vaccination is of great and amply-proved utility. The answer to the second part of the question is in the negative.

Ministry of Health and Small-pox.

Mr. **GROVES** asked the Minister of Health the reasons why the words about the tragedy of a widespread epidemic of small-pox being realised had been omitted at the end of the first paragraph in the 1924 edition of the Ministry of Health's pamphlet, No. 8, on the subject of small-pox and vaccination.—Mr. N. **CHAMBERLAIN** replied: The words in question were omitted in view of the general mildness of the type of small-pox prevalent in this country at the time the pamphlet was revised.

Protection against Diphtheria.

Mr. **DUNCAN** asked the Minister of Health whether the three nurses who contracted diphtheria while attending a case of that disease in the Brentford urban district in March, 1924, as mentioned on p. 55 of the Annual Report of the Chief Medical Officer of the Ministry of Health for the Year 1924, had been previously immunised against that disease in any way; and whether any of the cases proved fatal.—Mr. N. **CHAMBERLAIN** replied: The answer to both parts of the question is in the negative. I am, however, informed that one of the nurses, seven months before attending the case referred to, had received a dose of diphtheria antitoxin, but that this dose would not confer immunity for more than one month after it was administered.

Medical Services in Africa.

Dr. **SHIELS** asked the Secretary of State for the Colonies how much below establishment strength were the medical and sanitary services of Nigeria, Gold Coast, Sierra Leone, Kenya, and Tanganyika, respectively; what steps were being taken to fill the vacancies; and who was responsible for recruiting and selecting the required personnel.—Mr. **ORMSBY-GORE** (Under Secretary for the Colonies) replied: As regards the West African Medical Staff, at present there are 19 vacancies in Nigeria, 13 in the Gold Coast, and none in Sierra Leone. Nine selected candidates are receiving instruction in this country in tropical medicine and eight more will commence instruction in the new year. There are no vacancies in Kenya and only one in Tanganyika. The vacancies and terms of service are advertised regularly in the medical press, and the attention of the universities and teaching schools is drawn to these services periodically; while advantage is taken of the presence of senior medical officers on leave in this country to visit the medical schools and interest the students in the colonial services. Selection of candidates is made by the Secretary of State with the assistance of a small subcommittee containing two medical men of distinction who advise as to the suitability of candidates who are interviewed by them.

FRIDAY, DEC. 18TH.

Housing.

On the motion for the adjournment,

Mr. T. **THOMSON** raised the question of housing. He said that under the various Housing Acts there had been erected from 400,000 to 500,000 houses. It was a foolish idea to suppose that that had, or was likely to do away with the shortage which existed in 1919. As a matter of fact the houses which were required to meet requirements and overtake arrears since the Armistice was over a million. The complacent attitude of the Ministry of Health that they were not satisfactorily overtaking the arrears was not a view held by everybody. As the arrears amounted to 500,000 houses it would be another ten years before they could regard the position with equanimity. He was sure that the Minister could not be satisfied with the progress made, and he invited him to tell the House what he proposed to do to expedite building.

Sir **LESLIE SCOTT** said he found himself in agreement with a great deal which Mr. Thomson had said and he regarded that as symptomatic of the attitude of the House to the housing problem. To a great extent it was getting outside the arena of party politics. They had solved the broad problem of the supply of housing accommodation in the country, though he agreed with Mr. Thomson that they had not yet caught up, or anything like, to the point at which they ought to be and which they must use every possible endeavour to attain as soon as they could. Six years had now passed since the end of the war and the time had come when the slum problem, as a problem somewhat separate from the main housing problem, ought to be tackled in grim earnest. It was a problem which was vitally affecting the efficiency of the whole of our labouring population, and one which they could not afford to leave as it was without using every conceivable effort that either Parliament or the local authorities could possibly make to assist in its solution. A large proportion of the workers of each great city must be housed in more or less the centre, and they must find houses for these people in the centre. The medical officer of health for Liverpool, in his report for the current year, stated that in Liverpool there were at present approximately 2246 houses of the worst type—i.e., back-to-back houses—which were absolutely unfit for anyone to live in for a week. Yet they had been inhabited for years. In addition to that there were some 6000 houses, not back-to-back houses, which the medical officer described as "in such an insanitary condition in respect to structure and sanitary arrangements that they called for improvement." The difficulties in the way of slum clearance were roughly two: In the first place they had to rehouse the displaced population, and that had been in the years since the war the greatest difficulty because of the dearth of houses elsewhere. In the second place there was the cost of acquiring those parts of an unhealthy area which were not actually occupied by insanitary houses and of acquiring land elsewhere within the centre of the city to house the displaced residents during the period while their own area was under reconstruction. If they were going to rehouse on the cleared area anything like the density of population which they were displacing they could not put back small houses. The Act of 1924 and the circulars under the previous Act aimed at 12 houses to the acre, which was too low a number for practical purposes in a large city, much as they would like to attain to it. The only thing was to have large tenement blocks, such as those that have been erected by the London County Council. The practical question was how to make those large tenement blocks as much like real houses as they could. In Liverpool they were proposing to adopt a system of something in the nature of a clearing-house where they could invite the displaced residents to go temporarily while the area was being demolished and rebuilt. They could build the clearing-houses in large tenement blocks of the right kind so that when they were no longer needed as clearing-houses they could be used as permanent houses. A great many local authorities had been prevented from embarking on slum clearance schemes because the cost was prohibitive. There was need for the reconsideration of the whole financial question of the cost in regard to slum clearances. There must be some way of getting on with this question of slum clearances. Either they must tempt local authorities by additional financial assistance, or they must impose upon them greater responsibilities and the Minister must have greater powers to see that those responsibilities were carried out. There ought to be powers of compulsory requisition for the purpose of acquiring sites in connexion with rehousing. Greater powers of town planning and road construction might be given in connexion with large improvement schemes. Thirdly, in regard to such schemes there ought to be a provision for betterment. He thought that the House should ask that this problem should be tackled with a view to the introduction of legislation next session.

Lieut.-Colonel **FREMANTLE** said that they had got over most of their legislative difficulties in regard to housing and the main thing that they wanted now was good will. They must consider the distribution of housing from a radical point of view. The only ideal at which they ought to aim, the only solution of the problem in the long run, was the creation of new towns on properly selected sites according to schemes well thought out beforehand. They had to persuade factories to move out to such places as Welwyn, and if they did so the workers would be delighted to move out. They had just discovered that the Trade Facilities Act was available to assist factories to be moved out in this way. Let them start this new idea; they had the opportunity now.

Mr. N. **CHAMBERLAIN** (Minister of Health) said that in the five years period ending 1904, which was the peak period of house-building in this country, the average number built per year was 116,370 of all kinds of houses. In the years 1905 to 1909 the number was 102,706. The figures applied to England and Wales. From 1909 to 1914 the average was 60,648. If one compared that with the 159,000 odd houses built this year and bore in mind that this was a gradually rising figure, he though that the Mrs. Gummidge of the Liberal Party (Mr. T. Thomson) must take heart. They did not need any fresh legislation to get new houses; they were getting them at an increasing rate, and they might be satisfied that they were on the right road, because they were certainly eating into the arrears at a very considerable rate. Every year as some of the more remote places got their needs filled there would be labour and materials released which would come to the assistance of some of the blacker and more difficult spots where there was a great amount of arrears to be made up. They were also making some progress in slum clearances. In the 24 years from 1890 until 1914 only 43 local authorities put forward 71 schemes in all. But in the six years 1919 to 1925, 71 local authorities had submitted 92 schemes, of which 83 had been confirmed. There was also an enormous amount of repairs, alterations and renovations going on all the time. In urban areas alone in the last year for which the complete figures were available—namely, 1923—256,000 houses were made habitable after the service of statutory notices by local authorities. In addition there were a number of houses which were made fit by the urban authorities themselves. Another 253,000 houses had been made fit as a consequence of informal notices given to the owners by the local authority. Something of the same sort of thing was going on in the rural areas. In the same year 49,530 more houses were put into habitable conditions in rural areas under similar proceedings. As regarded the housing of the population in large centres, he did not see at the moment any alternative but to contemplate to some extent the erection of flats, possibly what were called high flats, in some of the more crowded areas to provide for those who found it necessary, or who desired, to live near their work. But they should not imagine that it would always be the case that people would desire to live near their work, nor should they put themselves in a position so that it would be impossible if conditions changed to make better provision for the future. The slum problem was a social as well as a building question. Some education was necessary in the case of some of the slum dwellers to enable them to appreciate surroundings so different from those to which they had been accustomed.

Mr. BALDWIN (Prime Minister) said that for some reason or another which he did not pretend to diagnose it was quite evident that the offer he made in Glasgow in September with a view to encouraging the building of houses in Scotland had failed in its effect. Whereas he had made an offer applying to 4000 houses, the burghs had put in for less than a quarter of the number proposed. The counties had not yet been in a position to advise the Government. In these circumstances he had to announce that the £40 special subsidy scheme lapsed. In its place the Government intended to proceed forthwith with the erection of 2000 houses by alternative methods. They proposed in the first place to utilise the Scottish National Housing Company. The Government would finance the development and take every necessary step to secure its accomplishment. The number of houses was not large and represented barely 1 in 50 of the estimated shortage to-day in Scotland. But he hoped and believed that it would give a push to enterprise in Scotland, whether it be private enterprise or enterprise on the part of the local authorities, so that they might assist in bringing what was in the way of becoming a national scandal in Scotland to an end.

Mr. STEWART (who was Under Secretary to the Scottish Board of Health in the Labour Government) said he would beg the Secretary of State for Scotland and the Board of Health, in the interest of the well-being of the country and its citizens, to prevent, as far as they could, the erection of tenements and above all the development of the room-and-kitchen house. In Scotland they had already 113,000 room-and-kitchen houses out a total of 235,000. In Glasgow they were spending in health administration more on the treatment of tuberculosis than Birmingham was spending on the whole of its health administration. It cost them a quarter of a million pounds to deal with the effects of tuberculosis. At the moment they were building a sanatorium that would cost them £500,000, to house 400 people after they had been lucky enough to contract tuberculosis. They would spend over £2 per week per patient to cure them, and then they would send them back once more, with the foolishness that was characteristic of the country in many respects, to the rooms-and-kitchens, and single apartments. In three months, in six months, in nine months they would be back again, and then at the end of five years, after all their money was spent, they would be dead, every one of them.

MONDAY, DEC. 21ST.

Opium Control in India.

Mr. THURTLE asked the Under Secretary of State for India whether the Government of India agreed at Geneva to allow an independent committee of the League of Nations to visit India to examine the control of the opium traffic.—Earl WINTERTON replied: Under the protocol to the Geneva Convention a commission will be appointed by the Council of the League of Nations to decide at the end of five years whether control in the signatory countries is sufficient to prevent completely the smuggling of opium from constituting a serious obstacle to the effective suppression of the use of prepared opium in those territories where such use is temporarily authorised. The protocol has been accepted by the Government of India.

DONATIONS AND BEQUESTS.—Mr John Buchanan Hinshaw, Woolton, Liverpool, after certain legacies and subject to a life interest, gave the residue of his property as to £500 to the Royal Infirmary, Liverpool, and as to £500 to the Bluecoat Hospital, Liverpool.—Mr. Henry Peech, of Ridgway, Wimbledon, Surrey, steel manufacturer, and of Sheffield, who left £107,388, left the greater part of that sum for "such charitable institutions or benevolent objects as he may name in any memorandum and subject thereto as his sister-in-law, Vera Millicent Peech, may select"; but £10,000 is to be paid to Lord Mayor Treloar's Crippled Homes and £5000 to the Sunshine Home for Blind Children, Chorley Wood.—Miss Ellen Jane Sandys, Hove, besides other bequests, left £500 each to the Royal Hospital for Incurables and All Saints' Convalescent Hospital, Eastbourne.—Mrs. Katherine Louisa Ricketts, of Exmouth, who left £13,036, gave £125 each to the British Home for Incurables at Streatham and the Royal Hospital for Incurables, Putney, and the residue of the property as to three-twentieths to the Homes for Aged Poor instituted at Kensington, Paddington, Hammersmith, Battersea, and Norwood in the year 1869; two-twentieths to the Exmouth Local District Nursing Association; six-twentieths to the Home for Incurables at Streatham; six-twentieths to the Royal Hospital for Incurables, Putney; and three-twentieths to the Seamen's Hospital, Greenwich.—Mr. Alfred Frederick Ikin, of Crewe, a brakesman in the employ of the L.M. and S. Railway, has left in his will £1000 to the Crewe Cottage Hospital, with the wish that a bed should be named the Alfred Frederick Ikin bed, in memory of his late wife and himself.

Medical News.

UNIVERSITY OF OXFORD.—In the recent examinations for the degrees of M.B. and B.Ch. the following candidates passed in the undermentioned subjects:—

Medicine, Surgery, and Midwifery.—Francis J. Bach, New Coll.; Leslie J. Barford, Queen's; Reginald H. B. Bettington, New Coll.; Vernon H. Brink, Hertford; Noel Chilton, Brasenose; Alan C. Gairdner, University; Stanford, Howard, Christ Church; Raymond Lewthwaite, Magdalen; Richard G. Mathews, Queen's; Charles W. Simpson, Balliol; David O. Williams, Jesus; Kathleen G. Norton, St. Hugh's; and Nancy B. Ockenden, Lady Margaret Hall.

Materia Medica.—Henry H. Aitchison, Brasenose; John C. K. Chilcott and Cuthbert L. Cope, Exeter; Alan W. Cubitt, Wadham; Samuel B. Davis, Non-Collegiate; John L. Glover, Queen's; Robert E. Havard, Keble; Ensor R. Holiday, Trinity; Harry E. Mansell, Pembroke; and André J. M. Melly, University.

Pathology.—Michael D. Bower, Trinity; Vernon H. Brink, Hertford; Cuthbert L. Cope, Exeter; Walter N. Dickenson, Pembroke; Otto Hooper, University; William H. Hudson, Brasenose; Robert Illingworth, Exeter; Arthur J. Leslie-Spinks, Oriel; Robert G. MacGregor, Worcester; Ripley Oddie, Oriel; David I. Rees, Exeter; Grace Batten, Lady Margaret Hall; and Rosaleen L. Graves and Constance I. Pattullo, Society of Oxford Home Students.

Forensic Medicine and Hygiene.—Reginald H. B. Bettington, New Coll.; Michael D. Bower, Trinity; Vernon H. Brink, Hertford; John C. K. Chilcott, Exeter; Noel Chilton, Brasenose; John H. Chitty, New Coll.; James A. Eyres, Lincoln; Eric L. Fothergill, Keble; Alan C. Gairdner, University; Kenneth A. Hamilton, Christ Church; Reginald A. Haythornthwaite, Keble; Stanford Howard, Christ Church; Thomas C. Hunt, Magdalen; Richard G. Mathews, Queen's; Frederick J. Sale, Christ Church; Samuel Segal, Jesus; Charles W. Simpson, Balliol; Arthur G. Wilson, Brasenose; Edward M. Wright, New Coll.; Margaret N. Jackson, Somerville; and Constance I. Pattullo, Society of Oxford Home Students.

UNIVERSITY OF CAMBRIDGE.—Mr. Joseph Barcroft, M.A., F.R.S., Fellow of King's College, has been elected to the Professorship of Physiology left vacant by the death of Prof. J. N. Langley. Mr. Barcroft gained first-class honours in the Natural Sciences Tripos, Part II., in 1897, with distinction in physiology. He won the Walsingham Medal in 1899 and the Gedge Prize for original observations in physiology. He has held the posts of Oliver Sharpey lecturer at the Royal College of Physicians, University Reader in Physiology, and Fullerian Professor of Physiology at the Royal Institution.

UNIVERSITY OF LONDON.—At a meeting of the Senate held recently, Prof. E. A. Gardner, Vice-Chancellor, being in the chair, it was announced that Prof. A. V. Hill, F.R.S., has, on his appointment by the Royal Society to a Foulerton Chair, resigned the Jodrell Chair of Physiology tenable at University College. He will carry out his research work at University College, and the Senate have resolved that he shall continue to hold the title of Professor of Physiology in the University of London in respect of the functions to be discharged by him at that College.

The following Doctorates have been conferred:—

D.Sc. in Embryology: Mr. A. S. Rau, an internal student, of University College, for a thesis entitled Contributions to Our Knowledge of the Structure of the Placenta of Mustelidæ, Ursidæ, and Sciuridæ.

D.Sc. in Physics: Mr. W. B. Haines, an internal student, of University College and the Rothamsted Experimental Station, for a thesis entitled Studies in the Physical Properties of Soils.

Dr. W. E. Gye was awarded the William Julius Mickle Fellowship for 1926 in respect of the work which he has carried out during the past five years.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.—As the result of the Primary Examination for the Fellowship held from Dec. 8th to 17th, for which 130 candidates presented themselves, 40 were approved and 90 were rejected. The following are the names and schools of the successful candidates:—

J. C. B. Allen, Sydney and Middlesex; H. G. Armstrong, Toronto and Middlesex; N. Asherson, Middlesex and Univ. Coll.; M. R. Barrett, Cambridge and St. Thomas's; Geraldine M. Barry, Univ. Coll. and Royal Free; H. O. Blauvelt, Dalhousie and Univ. Coll.; D. H. Brinton, Oxford and St. Mary's; R. C. Brown, Durham and St. Mary's; A. J. W. Chamings, Cambridge and Middlesex; A. E. De Chazal, Univ. Coll. and Middlesex; A. S. El-Katib, Cairo and Middlesex; J. St. C. Elkington, Cambridge and St. Thomas's; E. S. Evans, St. Bart.'s; I. J. Fraser, Belfast and Middlesex; C. R. E. Freezer and G. F. Gibberd, Guy's; J. Gore, Birmingham and Middlesex; G. M. Gray, Aberdeen and Middlesex; E. V. Greeves, Belfast; G. J. Griffiths, Middlesex; S. J. H. Griffiths, Bristol and London; K. H. Hadley, Melbourne and Middlesex; C. W. Harris, Toronto and Middlesex; A. L. P. Jeffery, St. Thomas's;

R. W. Kenney, Dalhousie and Middlesex; D. McKelvey, Edinburgh and St. Mary's; J. D. McLaggan, Aberdeen and Middlesex; I. McPherson, Middlesex; T. J. Millin, Dublin; M. F. Nicholls, Cambridge and St. George's; A. B. Nutt, Sheffield and Middlesex; T. V. Pearce, St. Thomas's; S. R. C. Price, King's Coll.; R. W. Reid, St. Thomas's; M. Rothkopf, Middlesex; H. H. Stewart and G. S. Storrs, Cambridge and St. Thomas's; A. J. Watson, Middlesex; A. S. Wesson, Univ. Coll.; and W. J. Wilkin, Cambridge and St. Bart.'s.

University of Sheffield.—At examinations recently held the following candidates were successful:—

Final M.B., Ch.B. Examination.

Marjorie T. Crookes, Richard L. Flint, Thomas H. Harrison, John L. Jago, Phyllis A. Moore, and Elisabeth S. M. Sykes.

University of Manchester.—At examinations held recently the following candidates were successful in the subjects indicated:—

Final M.B. and Ch.B. Examination.

R. L. Holt (first-class honours, distinction in Medicine and in Forensic Medicine), Louise Aronovich, H. K. Ashworth, Marion L. Bainbridge, C. H. Bamford, A. R. Barber, J. R. Beal, Agnes M. Bodoano, Frances H. Bowden, John Crook, L. F. Evans, S. J. Firth, Beatrice N. Fletcher, J. B. Fulton, Riad Girgis, T. S. Hanlin, Barnett Hirsh, J. T. C. Keddie, Annie T. Leigh, Annie E. Mackintosh, W. D. Mitton, R. J. Owen, R. M. Pearce, Francis Reynolds, Raphael Shaffer, Agnes G. Smiley, Graham Stenhouse, J. K. Thomas, and J. C. Wilson.

Forensic Medicine.—Marguerite E. Cliff, I. H. Freedlander, John Hunt, Harry Pigott, W. S. Slater, and Olive de la W. Turner.

Medicine.—I. H. Freedlander.

Hygiene and Preventive Medicine.—Florence M. Blades, F. S. Hawkins, John Hunt, T. J. Kay, Harry Pigott, and Olive de la W. Turner.

Obstetrics and Surgery.—J. K. Anderson, Frank Appleton, H. K. Ashworth, Frances H. Bowden, George Bridge, Marguerite E. Cliff, T. K. Clifford, Joseph Crowther, Alec Fleming, Beatrice N. Fletcher, C. F. Garfit, Zaky Hanna, G. W. Jones, Annie T. Leigh, Annie T. Mackintosh, C. T. Mills, G. S. de W. Moll, Joseph Parness, Richard Pendlebury, L. C. Peringuey, Harry Pigott, Mary I. Prentice, Francis Reynolds, B. R. Sandiford, Kathleen Sheehan (distinction in Obstetrics), Maurice Sheehan, J. K. Thomas, W. C. D. Walmsley, J. T. Whitley, and Florence Whitrow.

Obstetrics.—R. H. Barnes, J. F. Caithness, A. F. C. Davey, Margaret Dyson, G. D. Hithersay, and J. H. Kitson.

Third M.B. and Ch.B. Examination.

Pathology.—S. K. Appleton, Dorothy Arning, Harold Arstall. A. H. Baker, Dorothy M. Bradley, E. H. Brooks, Agnes N, Buckley (with distinction), M. A. Chamberlain, Frank Cort. E. B. Davies, H. V. Crabtree, Ralph Edmondson, Muriel M. Edwards, Amy H. Herbert, I. M. Hughes, J. H. Jones, J. A. Longworth, Jean McD. Marshall, H. E. Martin, J. S. Miller, J. W. Murray, Robert Newton, Stanley Nowell, J. R. Nuttall, R. P. Osborne, H. A. Palmer, G. H. Racklyeft, Norah Regan, Marshall Robinson, Eleanor B. Schill, Lucy Stokoe, C. E. Sykes, Alfred Thomas, Herbert Townley, Joseph Vine, F. F. Waddy, Josephine Walmsley, K. H. Watkins (with distinction), and Raymond Whitehead.

Pharmacology.—Leslie Bold, E. H. Brooks, Mary G. Davies, Kathleen McGowan, J. W. Murray, G. L. Normington, H. A. Palmer, Henry Tickle, Joseph Vine, and Raymond Whitehead.

University of Edinburgh.—At the graduation ceremonial on Dec. 18th the following degrees were conferred:—

Doctor of Medicine.

*George Buchanan, †Andrew J. M. Butter, David D. Dunn, (in absentiâ), John B. Ferguson, †Robert M. Galloway, Henry D. Hayes, *Andrew F. Hewat, Eleanor H. Kelly, †James M'Intyre (in absentiâ), †William F. Mair, John D. Robertson, †John P. Stewart, ‡Philip H. J. Turton, and *Alexander B. Williamson (in absentiâ).

*Awarded gold medal for thesis. † Commended for thesis. ‡ Highly commended for thesis.

Bachelor of Medicine and Bachelor of Surgery.

William G. Annan, Jack Beinashowitz, George Black, Elisabeth Brearley, Janet H. Brown, Charles D. Bruce, Jean K. Burnie, Alexander Cairns, Elizabeth F. Clark, George H. Clement, Donald M'M. Crawford, John W. Crichton, James P. Dunlop, Thomas MacF. Edward, Phyllis M. Edwards, Sadik L. El-Zik, Stanley Ford, Ian B. Georgeson, Jack Greenstein, John N. Hay, Isabelle W. Horsley, Alan W. Howarth, Evelyn B. B. Humphreys, William A. F. Hurst, John S. Ingles, Norman Kerr, Rachel Knox, Hugh MacCallum, Margaret A. Mackenzie, Alastair K. Mackintosh, Benjamin A. Meyer, Robert S. Mitchell, Makiwane C. C. Motebang, Mungo Park, Alexander G. Paton, George F. Saunderson, John A. R. Selby, William D. M. Sim, Hilton T. Smith, William Steel, Marjorie Steven, Donald Stewart, Meta H. Thomson, and Dorothea E. Walpole.

Diploma in Public Health.

Sisir Chandra Chatterjee, John Edgar Haine, John Telfer Smeall.

Royal College of Surgeons of Edinburgh.—At a meeting of the College held on Dec. 15th, Dr. A. Logan Turner, President, in the chair, the 25 successful candidates out of 67 entered, who passed the requisite examinations between Sept. 28th and Oct. 5th, were admitted Fellows:—

Harold E. Alexander, Nathaniel Beattie, Mervyn H. Elliot-Smith, Frederick G. Gibbs, Christian F. Krige, Ian H. McClure, Archibald D. McKenzie, Eric S. McPhail, David M. Mitchell, William B. R. Monteith, William Morrison, Douglas L. Muir, Clarence E. Nelson, Edwin R. Ormerod, David R. Owen, John A. Panton, Douglas W. L. Parker, Arnold Perry, Douglas C. Pigdon, James G. R. Scarff, Ian D. Stronach, Thakurdas Chuharmal Ramchandan, Robert Whillis, Rowland P. Wilson, and Dadabhoy Dinsahw Variava.

University of Durham: Faculty of Medicine. At examinations held recently the following candidate were successful:—

Third Examination for Degrees of Bachelor of Medicine and Bachelor of Surgery.

Materia Medica, Pharmacology, and Pharmacy; Public Health; Medical Jurisprudence; Pathology and Bacteriology.—Harold C. Beck, Thomasina Belt, Thomas S. Blaiklock, Ida M. Dodds, Walter Foskett, William A. Kirkpatrick, Leonard H. Lerman, Jerome A. O'Callaghan, William Stevenson, Alfred T. G. Thomas, Edward C. Vardy, and Thomas Welsh.

The Duchess of York has consented to become President of the South London Hospital for Women, Clapham Common.

Royal Sanitary Institute.—The courses of lectures and demonstrations arranged for next term will begin early in January. The first lecture of the course for sanitary inspectors will be delivered on Jan. 4th by Dr. Charles Porter, and the first lecture of the course for meat and food inspectors will be delivered on Feb. 5th by Mr. J. R. Hayhurst. Further information can be obtained from Mr. E. White Wallis, director and secretary, at the Institute, 90, Buckingham Palace-road, London, S.W. 1.

Fellowship of Medicine and Post-Graduate Medical Association.—A further series of open lectures has been arranged from Jan. to March on general subjects. Dr. Herbert Spencer will give the opening lecture on Abdominal Palpations in Pregnancy (with lantern demonstration) on Thursday, Jan. 21st, at 5 P.M., in the Lecture Hall of the Medical Society of London, 11, Chandos-street, W. From Jan. 11th to 23rd the Prince of Wales's General Hospital will hold an intensive course in general medicine, surgery, and the special departments. The daily lecture at 4.30 P.M. is free to members of the Fellowship of Medicine. During January, beginning on the 4th, a series of lecture-demonstrations on Psychological Medicine has been arranged for Tuesdays and Saturdays, at 11 A.M., at the Bethlem Royal Hospital. Also beginning on Jan. 4th a four weeks' course of lectures and demonstrations in the Diagnosis of Nervous Diseases will take place at 5 P.M. at the West End Hospital. At the North-Eastern Hospital a three weeks' course in Infectious Fevers will be given on Wednesdays, at 2.30 P.M., and Saturdays, at 11 A.M., from Jan. 11th to 30th. An all day course has been arranged in Diseases of Children at the Queen's Hospital from Jan. 18th to 30th. Another whole day course will take place from Jan. 18th to 30th at the National Hospital for Diseases of the Heart. From Jan. 11th onwards it is intended to hold special weekly demonstrations in clinical surgery. The first of these will be given at 5 P.M. at St. Mark's Hospital by Mr. J. P. Lockhart-Mummery, and subsequent announcements will appear in the Medical Diary. A copy of each syllabus of the foregoing courses and of the Fellowship General Course programme may be obtained on application to the secretary at 1, Wimpole-street, London, W. 1.

Royal Institution of Great Britain.—The one hundredth course of Christmas lectures adapted to a juvenile auditory will be delivered at 3 P.M. on Dec. 29th and 31st, and Jan. 2nd, 5th, 7th, and 9th, by Sir William Bragg, F.R.S. The title of the lectures is Old Trades and New Knowledge, and the individual lectures deal with the following trades: (1) the trade of the sailor; (2) of the smith; (3) of the weaver; (4) of the dyer; (5) of the potter; (6) of the miner.—The first Friday evening discourse in 1926 will be held at 9 P.M. on Jan. 22nd, when Sir William Bragg will speak on the Work of the Davy Faraday Research Laboratory. On the 29th Sir William B. Hardy, F.R.S., will speak on Films.—Among the general courses of lectures to be delivered before Easter, 1926, is one on Jan. 19th and 26th, at 5.15 P.M., on X Rays and Living Matter, by Prof. J. A. Crowther. Dr. Eric K. Rideal will lecture on Surface Action at 5.15 P.M. on Feb. 2nd and 9th. Prof. Joseph Barcroft, F.R.S., will lecture at 5.15 P.M. on Feb. 16th, 23rd, March 2nd and 8th on the Egg—(1) introductory, (2) the shell, (3) the yolk, and (4) the white. On March 16th and 23rd, at 5.15 P.M., Prof. Cecil H. Desch, F.R.S., will lecture on the Growth of Crystals. Prof. Charles J. Patten will give two lectures at 5.15 P.M. on Jan. 21st and 28th, one entitled the Language of Birds, and the second the Breeding Factor in Birds. Further information may be obtained from the secretary at the Royal Institution, Albemarle-street, London, W. 1.

POPLAR HOSPITAL FOR ACCIDENTS.—At the festival dinner last week Sir Alan Anderson stated that during the past year the hospital had broken records in annual subscriptions, donations, and out-patients' attendances, while the dinner collection, £13,600, was the largest that had ever been known.

APPROVED INSURANCE FUNDS AND MANCHESTER CANCER APPEAL.—At a meeting of the National Union of Trade Union Approved Societies, it was stated that having regard to the occurrence of cancer of the scrotum in the spinning room, the executive of the Operative Cotton Spinners' Association desired to contribute to the appeal recently made. An application was made to the Ministry of Health regarding a proposed gift of £1000 to the Cancer Fund from the approved insurance funds. The Ministry replied that such a gift could not be made under Section 26, because the Manchester Cancer Research Committee was not a charitable institution.

Appointments.

CUMMING, W. M., M.B., Ch.B. St. And., D.P.H., has been appointed Senior Assistant Medical Officer, Grove Park Hospital for Tuberculosis.

LITTLE, C. E., M.B., Ch.B. St. And., to be Certifying Surgeon under the Factory and Workshop Acts for the Rhyl District of the County of Flint.

Vacancies.

For further information refer to the advertisement columns.

Ascot, Heatherwood Hospital.—Res. Asst. M.O. £300.

Bedford County Hospital.—Asst. H.S. At rate of £130.

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Births, Marriages, and Deaths.

BIRTHS.

ANDREW BIRD.—On Nov. 22nd, at Lumeah, 101 Kitano-cho, 2-Chome, Kobe, Japan, the wife of Dr. G. Andrew Bird—a daughter.

BAILEY.—On Dec. 13th, at Denburgh Park, Banstead, the wife of R. J. Bailey, L.D.S., of a son.

MARRIAGES.

DUNLOP—HEATH.—On Dec. 14th, at Old Greyfriars, Edinburgh, Gavin Alexander Dunlop, M.B., Ch.B., to Rosamond, daughter of Mr. and Mrs. Heath, Hanworth, Middlesex.

TUNBRIDGE—RODDY.—On Dec. 15th, at Holy Trinity Church, Leamington Spa, William Stephen Tunbridge, M.A., M.B., B.Ch. Oxf., to Mildred Emma Leathes, the younger daughter of Colonel Roddy, C.B., and Mrs. Roddy, of Bareilly, Leamington.

DEATHS.

McILROY.—On Dec. 16th, at The Priory, Roehampton, John Morrison McIlroy, M.R.C.S., L.R.C.P., in his 65th year.

POWELL.—On Dec. 15th, at Cleveland-square, W., Sir Richard Douglas Powell, Bart., K.C.V.O., M.D., aged 83.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Notes, Comments, and Abstracts.

AN ALPINE THERMAL STATION.

BY T. N. KELYNACK, M.D. MANCH., M.R.C.P. LOND.,

SENIOR PHYSICIAN TO MOUNT VERNON HOSPITAL.

LOECHE-LES-BAINS, Leukerbad—or simply Baden as it is known locally—occupies a unique position among European thermal stations. Its natural hot springs are in character and therapeutic properties similar to the famous waters of Bath.

Situation and History.

Leukerbad, with a normal population of 600 souls, is situated in the Canton of Valais in the picturesque valley of the Dala at an altitude of 4630 feet, just below the impressive Gemmi Pass, surrounded by green flower-laden pastures, high alps on which cattle graze, and mules climb in summer, dense forests of pines, sparkling glaciers, and snow fields with rocky peaks from which unrivalled panoramas of the snow-clad mountains of the Bernese Oberland and the giants which lie to the south of the Rhone can be obtained. The village, tucked away as it is on the north side of the Rhone Valley, can yet be readily reached. The Simplon Express from Calais passes through Leuk from whence a narrow-gauge electric and rack-and-pinion railway bringing the traveller direct to the baths of Leuk in an hour. There is a good road 17 km. long up the valley suitable for skilled motorists.

Loeche-les-Bains with the rocky wall of the Gemmi behind.

Leukerbad, there is reason to believe, was known to the ancient Gauls and, like our own Bath, was discovered by the Romans. It is thought that in the first centuries Christian sick folk resorted to the hot springs, but it was probably not until the end of the fifteenth century that the fame of the waters extended to other countries. By 1500 the bathing establishments had developed into important and valuable properties.

The Thermal Springs.

The natural hot springs known to exist are over a score in number; of these the most important are now associated with five hydrotherapeutic establishments, giving systematic courses of baths. Each of the principal baths is connected by covered ways with one or more of the chief hotels, so that the patient can pass directly from his own room to the hot waters. The principal hotels and baths are under one control. The season extends from early in May to the beginning of October, and during recent years endeavours have been made to develop the place as a winter sports station with a season extending from Dec. 15th to the end of February.

The temperature of the water varies from 102° to 124° F. It is conjectured that the depth of the springs is at least 5000 feet, but the conditions which give rise to thermal springs of such constancy are not exactly known. The water is clear and almost tasteless. Chemical analysis shows the presence of sulphates of calcium, magnesium, sodium, and strontium; carbonates of calcium, magnesium, manganese, and iron; chlorides of potassium, sodium, ammonium, and lithium; with traces of alum, silica, arsenic, carbonate of copper, and sulphate of barium. Recent investigation has shown that the waters have radio-active properties.

Bathing Régime.

Patients entering on a course of hydrotherapeutic treatment are expected to consult one of the two doctors in residence during the summer—Dr. A. Bayard and Dr. R.

Zen-Ruffinen—with a view to direction regarding the form, application, and duration of the baths with such other treatment as may be desirable. A full course of baths extends usually over three weeks. The baths are open from 5–12 A.M. Patients generally take their petit déjeuner (coffee and milk, fresh rolls and butter, and conserves) at 7 A.M. while in the bath, served on a tray placed on wooden floats. In addition to the public baths there are family and private baths for individuals. Patients remain in the baths for periods up to several hours, afterwards resting for some considerable time in their own rooms. Thus, in the majority of cases the whole morning, up to déjeuner at 12.30, is devoted to treatment. Along one side of the Grand Bain, connected with the Maison Blanche, is a gallery to which spectators on removing their hats are admitted and who are expected to drink of the waters and contribute a trifle pour les pauvres. At each of the baths are experienced attendants who carry out special forms of hydrotherapeutic treatment and massage. In addition to the baths patients drink the waters and have their rest and exercise regulated. The dietary varies considerably according to the hotel chosen. In addition to the larger hotels and hydropathic establishments, there are a number of inns frequented by tourists.

Indications.

Among the diseases for which the baths at Leuk have proved beneficial are various forms of chronic inflammatory affection, rheumatoid and other arthritis, gout, lumbago, fibrositis, sciatica, and other neuritic conditions; varicose veins, phlebitis, and chronic ulceration of the lower extremities; catarrhal states involving the mucous membranes of respiratory and urogenital tracts; certain skin diseases and renal affections; neurasthenia and convalescence from various acute diseases. For overworked, brain-fagged men and women a course of treatment in this restful mountain station with its invigorating air is often of benefit.

There is a public bath hospital with which is associated, in a separate building, a series of baths. Residence in the hospital, which is under the care of Catholic sisters, and treatment in the baths is available at low fees for suitable necessitous cases from all countries.

On the north side of the village, close to the main road which descends to the Rhone Valley, is an open spring where hot water bubbles up. Simple wooden benches have been erected over the water, and at this spring, open to all comers free of any charge, are to be seen children and village folk side by side with men and women of all sorts and conditions. Partial immersion in this spring produces marked local reaction and is quickly followed by a general reaction. Immersion of feet and legs in the hot spring after a mountain excursion brings about a sense of warmth and comfort. I noticed an old lady with marked arthritis of the knee-joint spreading over the swollen part some of the fine alluvial deposit to form a kind of radio-active paste.

Amenities and Access.

For the young and vigorous there are numberless charming walks and climbs, while for the delicate and elderly there are many and varied walks on easy gradients. There is a Roman Catholic parish church, a Protestant chapel at which services are held in English and French, a chemist and shops in which all the requirements of the visitor can be met. Guides and porters with mules can be obtained by those desiring excursions in the high mountains.

Loeche-les-Bains is a favourite resort with Swiss doctors, and the thermo-mineral springs at this picturesque mountain health station might be better known by British practitioners. The manifold forms of rheumatism, osteo-arthritis, fibrosis, neuritis, and allied affections would reap benefit by a holiday at Loeche-les-Bains and a course of its wonderful thermal baths. Mr. Wattelet, director of the Société des Hôtels at Loeche-les-Bains, will furnish English doctors with full particulars regarding the baths and hotel facilities. A return ticket from London to Loeche-les-Bains costs first-class from £10 9*s.* 5*d.* to £8 18*s.*, second-class, £7 11*s.* 8*d.* to £6 6*s.* 7*d.*, according to route. Full particulars regarding travel can be obtained from the various travel agents or from the London office of the Swiss Federal Railway, 11B, Regent-street, S.W. 1.

THE NEW HEALTH SOCIETY.

A NEW Health Society, or rather "The New Health Society," of which Sir W. Arbuthnot Lane is president, was launched on Dec. 11th at a luncheon given by the Aldwych Club, whose president, Alderman Sir Charles Wakefield, was in the chair. Lord Oxford and Asquith said the aim of the society was not so much to cure the ill as to keep the people well. In England and Wales £12,000,000 were spent annually on sickness and disability benefits for illness that might be prevented. Many diseases were due to artificial methods of our civilisation, and in particular to diet; 80 per cent. of the most disabling forms of illness were due not to malnutrition, but to wrong feeding, too much meat, too little milk. The society would work with the family doctor and the specialists. Its main business was to disseminate knowledge of the laws of health and the causes of disease. New methods had reduced the prison population, new methods would, he hoped, lessen the strain on the voluntary hospitals. Mr. Philip Snowden said that we lost in industry, from physical weakness, £400,000,000 worth of work every year. To advise more milk was good, but to provide more milk for the children was more important. He hoped that the alcohol question and waste therefrom would not be forgotten. Subscriptions were asked for, and £525 at once given.

On the evening of Dec. 12th Lady Oxford and Asquith broadcasted an appeal from London on behalf of the new society. She had just read how Queen Elizabeth got herself a bathroom, in which she expected to be able to have a bath every three months, whether she needed it or not. That was in the bad old days, as they should be called, when medicine was superstition mainly, when people believed in witchcraft, and no one knew how to get rid of diseases like plague, rampant everywhere. Our present outlook was wide, hospitals were nearly perfect, and our great hope was in prevention, and we wanted all to be fit. But not everyone knew how to keep fit; it was part of the work of this society to show them. It would bring benefits to large employers of labour, whose staffs are reduced by illness, to mothers whose children it would save. It would, Lady Asquith concluded, help the doctors, and would financially benefit the country as much as 2*s.* off the income-tax.

A STOLEN CAR.

To the Editor of THE LANCET.

SIR,—My car was stolen yesterday by the following *modus operandi.* One confederate stands by the surgery door whilst the other hides on the remote side of the car, and, if disturbed, the former says, "Will you come round to Mrs. Collins—a midwifery case—*not* at once, but after surgery will do." And whilst the doctor is investigating the particulars (which were lies) the confederate starts the car and they go off together. Will anybody assist in detaining this man if he calls with such a cock-and-bull story.—I am, Sir, yours faithfully,

R. LARKIN, M.D.

Trinity-sq., Southwark, S.E., Dec. 16th.

*** We are glad to learn that Dr. Rance Johnson of Hampstead, whose car was stolen while he was seeing a patient in Bedford-square on Dec. 17th, has recovered it through the police, albeit in damaged condition. Dr. Johnson suggests that companies insuring motor-cars for medical men should insert a special clause in the agreement making an allowance for hire during the temporary loss of a car from accident or theft.—ED. L.

CALENDARS AND DIARIES FOR 1926.

A CONVENIENT block calendar for 1926 (The A.F.D. Diary) has been issued by the Anglo-French Drug Co. (238A, Gray's Inn-road, London, W.C.1). There is provided for each day throughout the year a sheet of white paper, 4 inches square, for written memoranda, and the stiff hinged cover provided preserves the privacy of the notes and lends the calendar the appearance of a bound book. A certain number are available gratis to medical men on application to the company.

INFECTIOUS DISEASE IN ENGLAND AND WALES DURING THE WEEK ENDED DEC. 12TH, 1925.

Notifications.—The following cases of infectious disease were notified during the week:—Small-pox, 144 (previous weeks 115 and 105); scarlet fever, 1962; diphtheria, 986; enteric fever, 37; pneumonia, 1917 (previous weeks 1176, 1531, 1186, and 889); puerperal fever, 63; cerebro-spinal fever, 10; acute poliomyelitis, 10; acute polio-encephalitis, 1; encephalitis lethargica, 44; dysentery, 9; ophthalmia neonatorum, 112. There were no cases of cholera, plague, or typhus notified during the week.

The cases of small-pox were reported from the following counties: Derby, 21 (Derby C.B. 6, Bolsover 2, Blackwell R.D. 13); Durham, 87 (Gateshead C.B. 2, South Shields C.B. 1, Sunderland C.B. 1, Blaydon 52, Ryton 2, Seaham Harbour 1, Stanhope 2, Whickham 4, Chester-le-Street R.D. 3, Easington R.D. 3, Houghton-le-Spring R.D. 6, Lanchester R.D. 5, Sunderland R.D. 5); Northumberland, 5 (Newcastle-upon-Tyne C.B. 4, Castle Ward R.D. 1); Nottingham, 16 (Nottingham C.B. 3, Hucknall 2, Mansfield 1, Sutton-in-Ashfield 7, Southwell R.D. 3); Yorks, East Riding, 6 (Kingston-upon-Hull C.B.); Yorks, West Riding, 9 (Rotherham C.B. 1, Sheffield C.B. 2, Hipperholme 1, Rawmarsh 4, Halifax R.D. 1).

Deaths.—In the aggregate of great towns including London, there were 7 deaths from enteric fever (London 4), 71 from measles, 17 from scarlet fever, 44 from whooping-cough, 38 from diphtheria, 116 from influenza (previous weeks 100, 73, 61, and 44). In London itself there were 21 deaths from measles, 12 from diphtheria, and 22 from influenza.

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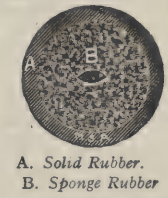

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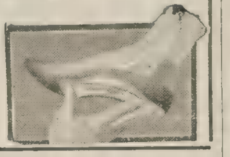

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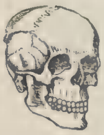

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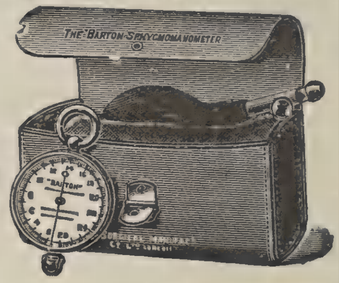

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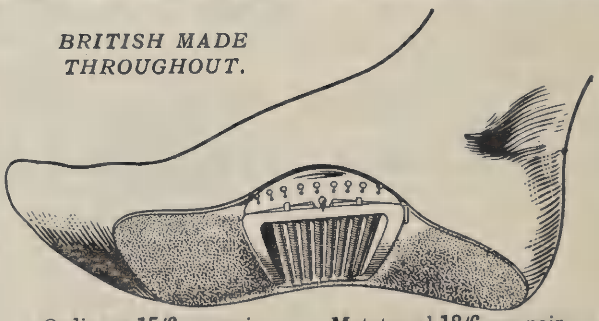

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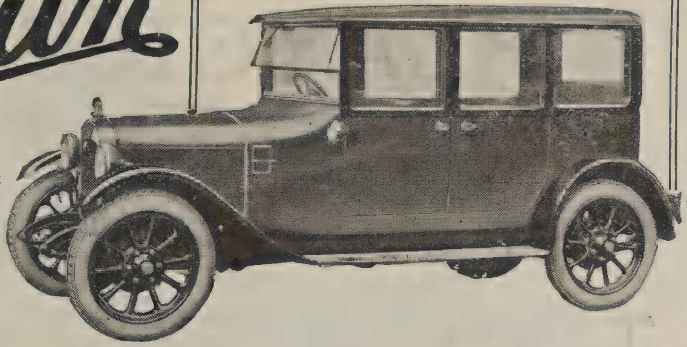

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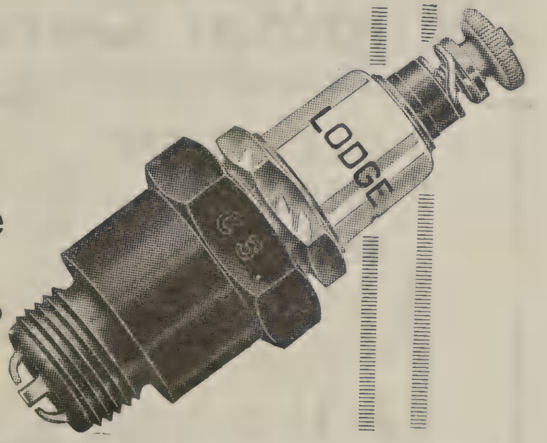

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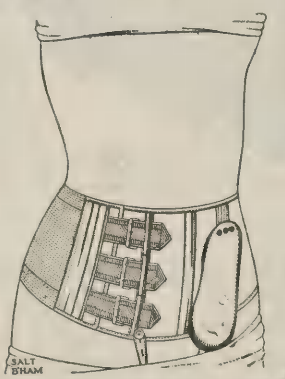

ADVANTAGES:
1. Sterilizable.
2. Absence of Odour.
3. Accessibility of removal.

No. 1.
Easily Sterilized.

The receiver (which is detachable from the belt) is moulded of specially vulcanised rubber which is sterilizable by boiling. This rubber portion will last considerably longer than those made of ordinary rubber and celluloid.

Medical Men are invited to apply for our special Colostomy Leaflet which gives fullest details and embodies special order form.

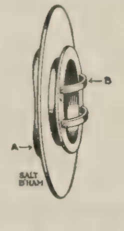

Fig. 1. Shows the moulded rubber cup (which may be boiled). The pad is indicated by "A" and rim (which when in position is *outside* belt), is shown at "B," which holds the mouth of the indiarubber bag.

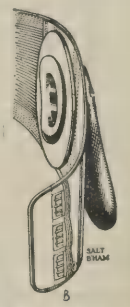

Fig. 2. Illustrates the method of attaching cup and bag to belt. The pad lies next to the body and the bag to receive fæces is stretched over the rim of cup *outside* the belt.

Established 1793.

Salt and Son Ltd.
8, Cherry Street, Birmingham.

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Kodak X-Ray Reduction Camera

for Bromide paper prints, film transparencies or lantern plates

With the new Kodak X-Ray Reduction Camera no focussing is required—automatic focussing scales are fitted to ensure that the reductions are always critically sharp. The Camera simplifies the system of reducing "Dupli-Tized" Film negatives of all sizes up to 17 × 14—to lantern slides or Bromide prints of 6¼ × 4¾ or smaller.

The Negative Illuminator 17 × 14ins. fitted with lampholder, 200 watt Lamp, 10 feet of electric flex and wall plug, detachable hinged film negative frame, double glazed, set of 8 masks, and brass wire frame hinged on illuminator and draped with black material to eliminate reflection.

The Camera is fitted with Kodak Anastigmat Lens f7·7 and Ball Bearing Shutter and is attached to skeleton platform support to ensure accurate centration.

One double plate-holder is included in the complete outfit with two ½ plate sheaths for film or Bromide paper and two lantern plate carriers.

Price complete £21

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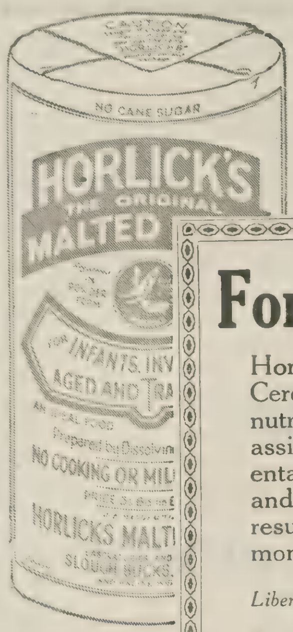

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Liberal samples free to Members of the Profession.

To secure the original, always specify HORLICK'S.

Manufactured by
HORLICK'S MALTED MILK COMPANY,
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HORLICK'S THE ORIGINAL MALTED MILK
Made in England

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Formula by Dr. Iwan Bloch

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Special Indications for Thelygan.

Infantile sterility. Underdeveloped mammæ, etc. Frigidity. Sexual disturbances in obesity and other metabolic disorders. Climacteric symptoms, amenorrhœa, neurasthenia, hypochondria, dysmenorrhœa.

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BISMOLAN Preparations are antiseptic, prevent the passage of infectious germs into the veins, contract the mucosa and blood vessels, cause the hemorrhoids to diminish in size, thereby avoiding the danger of bleeding.

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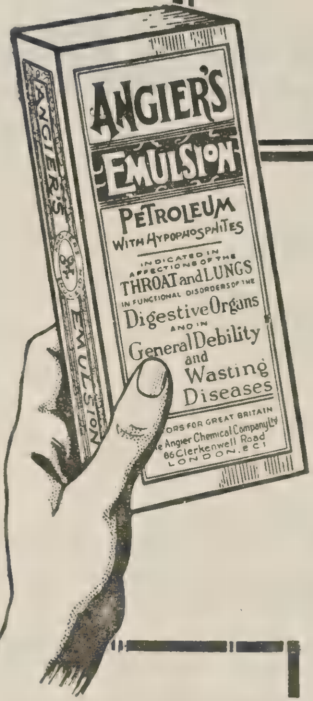
The Original & Standard
EMULSION OF
PETROLEUM



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SAMPLES TO
THE MEDICAL
PROFESSION

ANGIER CHEMICAL Co., LTD.,
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Angier's Emulsion is made with petroleum specially purified for internal use. It is the original petroleum emulsion—the result of many years of careful research and experiment.

In Gastro-Intestinal Disorders of a catarrhal, ulcerative, or tubercular nature, Angier's Emulsion is particularly useful. The minutely divided globules of petroleum reach the intestines unchanged, and mingle freely with intestinal contents. Fermentation is inhibited, irritation and inflammation of the intestinal mucosa rapidly reduced, and elimination of toxic material greatly facilitated. An improved state of the digestive functions and modification of the various symptoms traceable to auto-intoxication are notable results.

During Convalescence. After fever, dysentery, operations, or after any serious illness, Angier's Emulsion will improve and strengthen the organs of digestion and assimilation, and enable patients to derive the fullest benefit from any prescribed diet. The creation of appetite and the return of normal digestion is quickly brought about by its regular use.

Frail, Nervous Patients respond actively to Angier's Emulsion. It is a tonic in effect and an aid to digestion. Being a perfect Emulsion, it is presented in a form pleasing to the taste and acceptable to the most fastidious. Its good effects are accomplished in a safe and natural manner without entailing any extra work upon the weak or overburdened system.

ANGIER'S EMULSION

THE ORIGINAL & STANDARD EMULSION OF PETROLEUM

OF IMPORTANCE
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SINCE the introduction of LYSOL nearly thirty years ago it was always guaranteed by the Original Makers to contain 50% of free cresols. Upon this percentage of free cresol was based its bactericidal powers.

DIRECTIONS for the use of LYSOL in the disinfection of fæces, the cleansing and disinfection of the skin before operations, the sterilising of instruments, etc., etc., which have been followed for a great number of years, were compiled only after exhaustive bacteriological tests.

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ATTENTION, however, is drawn to the fact that there is now being sold as " LYSOL " preparations which contain less than 3% cresol, and it follows that should such preparations be used in the strength of dilutions indicated in the Original LYSOL that they will be practically useless for the purposes intended.

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Samples free to Medical Men.

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Restores Natural Bowel Action

AMONG the many remedies for constipation, bowel torpor, intestinal stasis or any form of dyschezia of functional origin, there is hardly one that has met with such instant approbation and acceptance by discriminating physicians as

AGAROL
BRAND COMPOUND

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8 ozs.
AGAROL
BRAND
COMPOUND
OF MODIFIED
MINERAL OIL
WITH PHENOLPHTHALEIN, GLYCERINE AND
AGAR AGAR
Dependable
Palatable
INDICATED IN CONSTIPATION
Lubricates and mixes with waste matter, making it soft and increased in bulk, thus restoring normal peristalsis and bowel activity. No nausea or griping. No oil leakage. Free from Alcohol, Sugar, Saccharin or Alkalies.
Dose for adults: One-half to one tablespoonful on retiring at night; if necessary repeat dose in the morning.
Dose for children: One-half to two teaspoonfuls, depending on age, taken either plain or mixed with milk or water.
Prepared by
William R. Warner & Co.
Established 1856
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New York
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Agents for Great Britain and Ireland
FRANCIS NEWBERY & SONS, Ltd.
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AGAROL is the original Mineral Oil — Agar-Agar Emulsion, and has these special advantages:

Perfectly homogenized and stable; pleasant taste without artificial flavouring; freedom from sugar, alkalies and alcohol; no contraindications; no oil leakage; no griping or pain; no nausea or gastric disturbances; ***not*** *habit forming.*

Any practitioner needs only to test this scientifically balanced combination of pure mineral oil, agar-agar and phenolphthalein in some severe case of constipation to understand why Agarol is winning the regard and confidence of a constantly increasing number of medical men. He will find that Agarol

1st—*produces* prompt and satisfying bowel evacuations;

2nd—*increases* the bulk, softness and plasticity of the fæcal mass, thus supplying the natural stimulus to peristalsis;

3rd—*imparts* functional tone and power to the intestinal muscles by maintaining conditions within the canal that induce repeated bowel action;

4th—*restores* functional activity of the bowels, so that regular evacuations soon begin to take place naturally, and continue without the need of further medication.

In Agarol, therefore, the practitioner has a remedy that *not only relieves* bowel malfunction *but actually corrects* it. Thus its influence is not temporary but persistent.

A generous supply for clinically testing will be sent to physicians on request.

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Prepared by WILLIAM R. WARNER & CO., Inc., *Manufacturing Pharmacists Since 1856.*

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BOOTS

THE STANDARD Bismuth preparation for the treatment of *syphilis* and other *spirochaetal* diseases. Bismostab has largely replaced mercury as an adjunct to Arsenobenzol Therapy. Consisting of a suspension of specially prepared, finely divided, pure Bismuth metal in 5% glucose solution, Bismostab—Boots is

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Sterile and
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Supplied in handy rubber-capped vials, containing 5 ccs., 10 ccs., and 1 oz. (28 ccs.).

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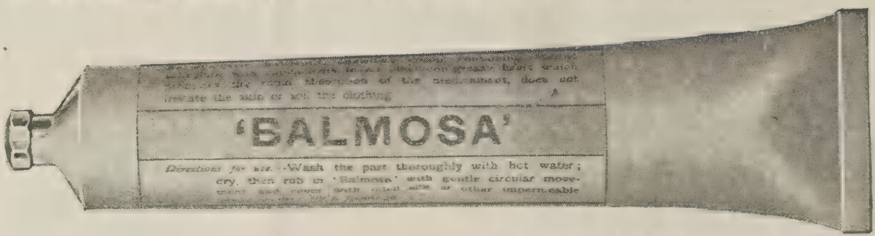
For Acute Rheumatism



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OTHER USEFUL OINTMENTS ARE

'OZOLINE'

A very powerful antiseptic and deodorant with an emollient base. In contact with moisture, 'Ozoline' liberates nascent oxygen, to which its properties are due.

UNG. 'RENAGLANDIN'

which consists of a soothing emollient base into which has been introduced 10% of a 1-1000 solution of 'Renaglandin'—an exhaust of the whole of selected healthy glands.

UNG. 'RENAGLANDIN' ANÆSTHETIC

Where pain or local irritation are pronounced, it is recommended that this variation be used, for example, in Fistula and Hæmorrhoids. Eucaine Lactate is introduced into the Ung. 'Renaglandin,' thus intensifying the analgesic and anæsthetic effect.

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Intestinal Stasis and

VIROLAX

the nutrient laxative

Virolax combines the nutrient properties of Virol with the lubricating effects of Medicinal Paraffin.

Though the Virol is used rather as a vehicle for the paraffin than for its food value, yet there are many occasions on which it is a distinct advantage to be able to supply easily digested food with a bowel lubricant.

Paraffin acts not only by directly facilitating the progress of the intestinal contents, but by inhibiting undue bacterial growth. Virol forms an admirable vehicle for the paraffin, which in Virolax is so finely emulsified that it mixes immediately with the intestinal contents and does not give that uneasiness in the lower bowel, often accompanied, in the case of unemulsified paraffin, by leakage of paraffin from the rectum.

Virolax and Intestinal Bacteria

Investigations have shown that Virolax has a peculiar selective action on certain bacteria which are known to be the cause of intestinal toxæmia. This fact goes far to explain the results of the Clinical use of the preparation and demonstrates the superiority of Virolax over liquid paraffin in its pure state.

Virolax

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Particularly suitable for Children, Women and delicate persons

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When Metabolism is Faulty

OVALTINE

TONIC FOOD BEVERAGE

Easily Digested, Readily Assimilated, Palatable, Soluble, Highly Nutritive, Essential Food Elements in Correct Ratio. Reasonable in Cost.

The above are the distinguishing features of this delicious combination of ripe barley malt, creamy milk, fresh eggs and the purest cocoa. A complete food, that reinforces the diet in a way necessary to ensure successful treatment.

A deservedly popular prescription in the dietetic treatment of tuberculosis, chlorosis, gastric or duodenal ulcer, nervous disorders, infantile marasmus, and convalescence after fever or operation. In agalactia 'Ovaltine' is a definite galactagogue.

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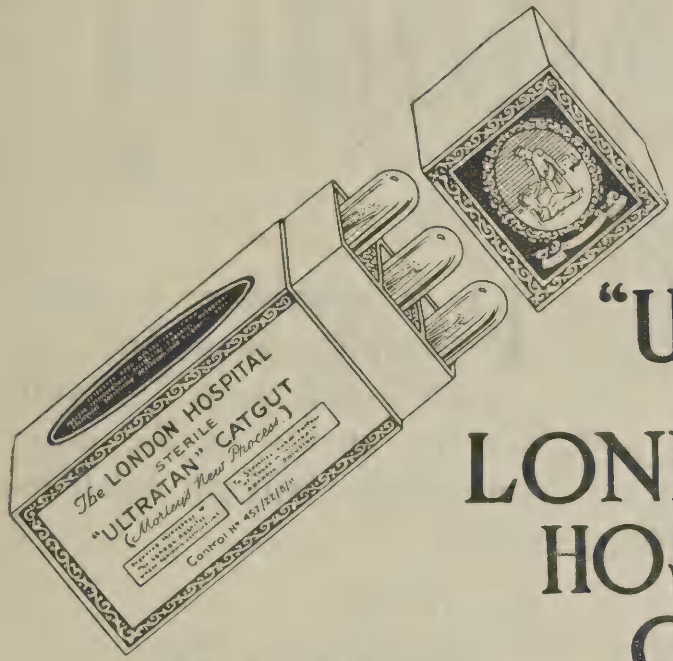
Drawing of a wall painting in a Theban Tomb, depicting Egyptian ladies at a feast.

A liberal supply of 'Ovaltine' sent free to medical men in private or hospital practice.



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LONDON HOSPITAL CATGUT

RELIABLE - BECAUSE

1.—Prepared at the London Hospital under strict antiseptic conditions.
2.—Sterilization of the gut starts immediately after the animal is killed.
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you make sure that your patient obtains a product prepared from the purest acetylsalicylic acid. It disintegrates promptly and ensures rapid action without gastric disturbance.

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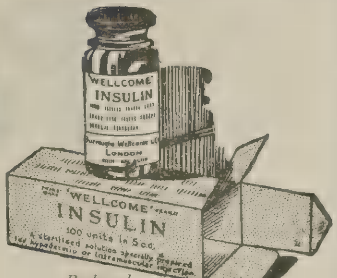

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Hypodermic

HYDROCHLORIDE
Sterile (10 UNITS)

Of equally high standard but occasionally more convenient.

The products are accurate in dosage and a solution of any strength may be prepared instantly without loss in filling the syringe.

Supplied to the Medical Profession, at 2/8 per carton in either packing

No. 150—Cartons containing 10 products in ONE tube

No. 152—Cartons of 10 tubes, each containing ONE product

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CYRUS THE GREAT—AT FIRST A PETTY KING AND THEN BUILDER AND RULER OF THE MIGHTIEST EMPIRE DOWN TO HIS TIME.—Cyrus, King of the petty state of Persis within the borders of the Median empire, rebelled against his vassalage to his kinsfolk, the Medes. He succeeded in throwing off the yoke, deposed the king and became head of a Persian empire. This meant hardly more than change of dynasty, for there was little distinction between Medes and Persians; internal administration continued almost undisturbed. He next defeated Crœsus, the fabulously wealthy king of Lydia, and annexed his territory before his allies the Babylonians, Egyptians, Spartans, Phrygians and Ionians could come to his aid, and these also he reduced to submission one after the other. In the East he subdued many tribes and annexed a great part of what is now Afghanistan. In a single campaign he defeated the army of Nabonidus and brought the Neo-Babylonian monarchy to an end; as a consequence, the Babylonian provinces in Syria were brought within the Persian Empire. Cyrus displayed remarkable qualities both as a general and as a man. As king of the then civilised world, he inaugurated an era of more enlightened and humane rule. He was the first great ruler of the Indo-European race in history. The accompanying bas-relief is the oldest identified sculpture of the Achaemenian period.

DATE: 550-529 B.C.

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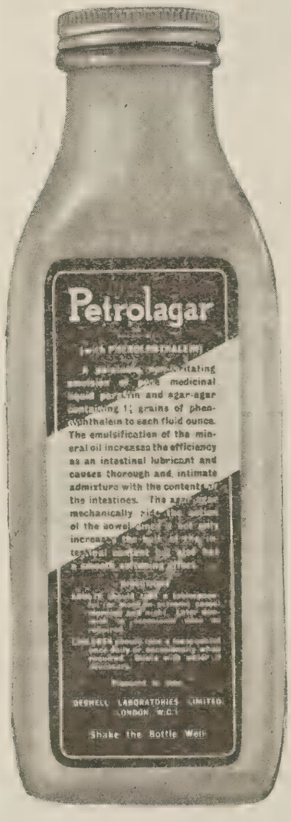
Petrolagar

DESHELL
(TRADE MARK)

A PRINCIPLE EFFECTIVELY APPLIED



It is not the purpose of the Deshell Laboratories Limited to propound a new theory as to the treatment of habitual constipation. The principle of intestinal lubrication is not novel; it has been immortalised by the pronouncements of recognised medical authorities.

It is with the more effective practice of this principle that we are concerned.

We approach the physician purely from the standpoint of the pharmaceutical chemist offering SOMETHING BETTER than the ordinary plain mineral oil supplied for the purpose. Our problem has been to overcome the objection of nausea, leakage, insufficient bulk, unsatisfactory end results. We feel justified in stating that we have accomplished our purpose in PETROLAGAR (Deshell).

In brief, PETROLAGAR (Deshell) presents a palatable non-irritating emulsion of a fully saturated mineral oil with agar-agar. The emulsion admits of more intimate admixture with the fæces, and hence a greater degree of lubrication. The agar adds soft bulk, mechanically aids peristalsis, decreases tendency to leakage, and secures palatability.

PETROLAGAR (Deshell) is now manufactured in LONDON and because of its outstanding point of superiority and ethical presentation to the medical profession merits consideration where intestinal lubrication is desired.

PETROLAGAR is issued in Pound and Half-Pound sizes as follows:—

PETROLAGAR (Plain) No. 1.
PETROLAGAR (Phenolphthalein) No. 2.
PETROLAGAR (Alkaline) No. 3.
PETROLAGAR (Unsweetened, no sugar) No. 4.

Clinical Trial Samples will be sent on request.

Sole Manufacturers: DESHELL LABORATORIES, LTD.
Laboratories and Offices:
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Pharmaceutical Department, 40, Southwark St., London, S.E. 1.
have pleasure in announcing that they are in a position to supply

PYRIDINE - β - CARBONIC ACID DIETHYLAMIDE,

the new, water-soluble, analeptic with a camphor action, and which was the subject of an article by Prof. E. Stanton Faust, published in *The Lancet*, June 27th, 1925, under the name of

CORAMINE

Indications

Shock, heart asthenia following infectious diseases (pneumonia, etc.), arteriosclerosis, renal affections, bronchial asthma, emphysema, poisoning through narcotics, asphyxia of the new-born, etc.

Packages

Ampoules (1.1 cc.) for hypodermic and intravenous use, boxes of 5, 20, & 100.

Liquid for oral administration, vials of 15 cc. and 100 cc.

REPRINTS OF PROF. FAUST'S ARTICLE WILL BE SENT TO PHYSICIANS ON REQUEST.

PLEASE NOTE NEW ADDRESS.

AN EMPIRE PRODUCTION

OF GREAT VALUE TO THE INVALID

Burgoyne's Tintara

OBTAINABLE OF ALL WINE DEALERS

4/- 6/-

Ferruginous.

THIS PURE AUSTRALIAN WINE was introduced in 1871, it has been highly recommended by the Medical Profession in all cases where strength and nerve force have required building up. In anæmia, debility, neurasthenia and in convalescence after any illness, this full-bodied, generous wine, palatable as well as health producing, has proved itself the finest of all natural stimulants.

Sample Bottle sent free in the United Kingdom, on receipt of professional card.

P. B. BURGOYNE & CO., Ltd.,
Burgoyne House, Dowgate Hill, London.

Trade **'BYNOL'** *Mark*

"A Perfect Combination of Malt Extract with Cod-Liver Oil"—*B.M.J.*

"Bynol" contains 30% by volume of the highest grade Norwegian Cod-Liver Oil very finely emulsified with the "Allenburys" Malt Extract and aromatics, thus producing a rich, easily digestible and palatable product. The main ingredients, particularly the Cod-Liver Oil, are rich in vitamins which are conserved in their full potency by the special processes used in the manufacture of the product. "Bynol" is of special value to those who require additional fat and vitamins beyond what is supplied by an ordinary dietary—to backward and weakly children, nursing mothers, and those suffering from malnutrition or having a predisposition to phthisis and respiratory diseases in general. The usual dosage is from one teaspoonful to one tablespoonful three times a day after meals.

Issued in wide-mouthed jars containing 10, 20 and 50 fluid ounces.

Clinical trial sample will be sent post free to members of the Medical Profession.

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A 5% No-claim Bonus will be given to Holders of our

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BRANDY
for
ILLNESS
means
MARTELL

A Necessity in
The Hospital
The Nursing Home
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Invaluable to
The Physician
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HAEMO-ANTITOXIN (SOFOS)

(Maragliano Institute, Genoa, Italy.)

Provides a specific treatment (active and passive) of Tuberculosis by oral administration, which gives more satisfactory results than by hypodermic injection of Antigens.

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Registered Trade Mark

"ICHTHYOL"

(SULPHONATED SCHIST-OIL PREPARATION)

IMPORTANT NOTICE.

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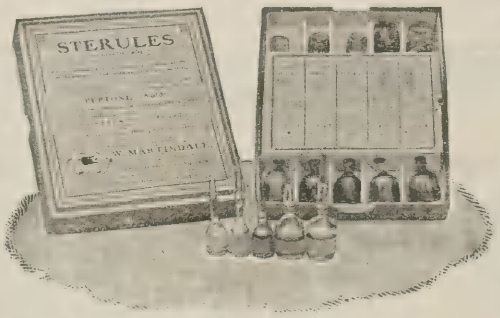

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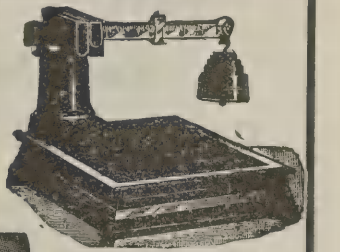

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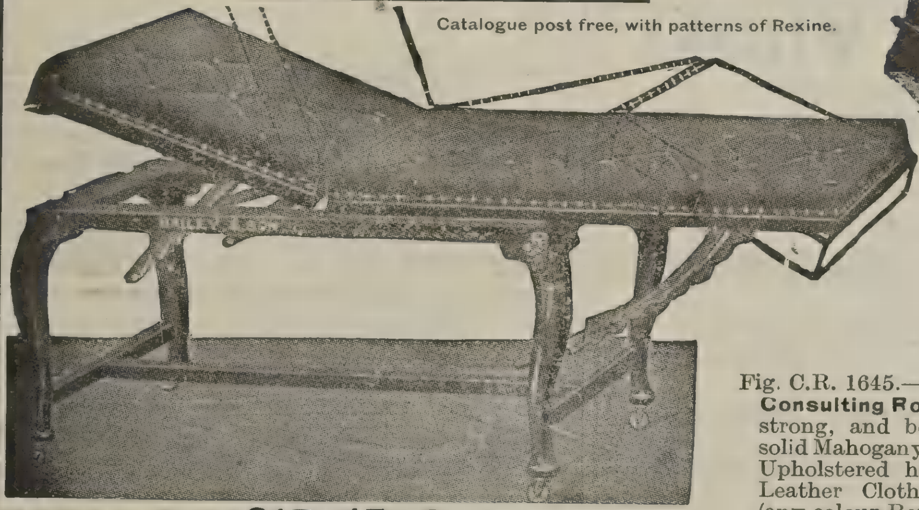

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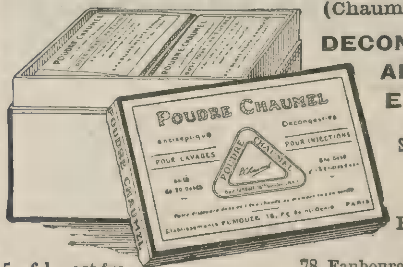
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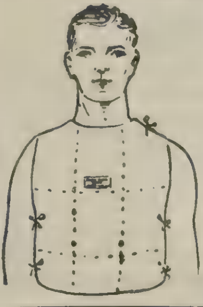

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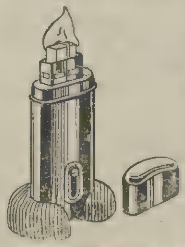

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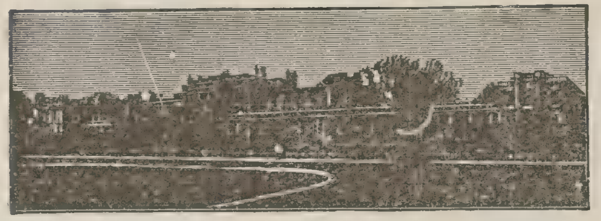

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This Sanatorium provides for the treatment of patients suffering from Pulmonary and other forms of Tuberculosis.
Medical Staff—A Consulting and a Visiting Physician.
Nursing Staff—Fully Trained Night and Day Staff.
Terms from 7 guineas a week. There are no extras. One hour from London by road or rail.

For full particulars apply to the SECRETARY, FARMWOOD, ASCOT.
Tel: Ascot 519.

INEBRIETY.

[Telephone: 16 Rickmansworth.

DALRYMPLE HOUSE, RICKMANSWORTH, HERTS.

For the treatment of Gentlemen under the Act and privately. Established 1883 by an association of prominent medical men and others for the study of inebriety; profits, if any, are expended on the institution. Large secluded grounds on the banks of the river Colne. All kinds of out-door and in-door recreations and pursuits.—For particulars apply to F. S. D. HOGG, M.R.C.S., &c., Resident Medical Superintendent.

BAY MOUNT, PAIGNTON

ALCOHOLISM, DRUG HABIT, NEURASTHENIA.

Ladies and Gentlemen received.

Small, select home, standing in 3½ acres of secluded gardens overlooking Torbay, near Torquay. Billiards, golf, tennis &c. Every case treated with a view to rapid and permanent cure by up-to-date scientific methods. Consultations, Harley Street, by appointment.

Prospectus, yearly report, etc., from SEC. or STANFORD PARK, M.B., Res. Med. Supt. Tel.: Paignton 5110.

PEEBLES HYDRO.

Beautifully situated 600 feet above sea level. Facing South, completely sheltered from North and East.

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All modern Baths, Douches, Massage. Fully qualified Masseur and Masseuse.

IDEAL WINTER RESORT.

Electric Light, Central Heating, Electric Lift, Three Billiard Tables, Ball Room, Winter Garden, Swimming Bath, Hard and Grass Tennis Courts, Croquet Lawn, Golf Course.

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A Residential and Treatment Centre. Telephone 341.

Every variety of Electrical, Massage, and Thermal Treatment: Brine, Turkish, Nauheim, and Radiant Heat Baths.

Resident Physician—**W. Johnson Smyth, M.D.**

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THE PARADISE OF THE PYRENEES

SUMMER AND WINTER SEASONS
2000 Feet High.

Excellent climate—sheltered from winds—free from humidity. 12 Natural Radio-active Sulphur Springs. Winter treatment of rheumatism, gout, sciatica, nervous affections, bronchitis, convalescence. Sun, air, and rest cures.

Special Nebulisation, Radio-aero bath, and Mechanotherapic treatment.

Resident English-speaking physician, Dr. GESUA from Paris.

Large Thermal Establishments communicating with first-class Hotels; newly furnished Villas, likewise fitted with central heating, inexpensive. Good Club with English Billiards, Ladies' Bridge Rooms, Orchestra, Tennis, Cinema, &c.

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Vernet-les-Bains, Pyrenees Orientales.

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VICTORIA SANATORIUM, DAVOS, GRISONS, SWITZERLAND.

Altitude 5,200 feet above sea level.

For the Treatment of all forms of **TUBERCULOSIS**

Situated in the centre of the English Quarter, Davos-Platz. This establishment is intended to receive *English-speaking patients* suffering from tuberculosis.

For particulars apply to the Physician in charge, BERNARD HUDSON, M.D.(Cantab), M.R.C.P., Swiss Federal Diploma, The Victoria Sanatorium, Davos-Platz, Switzerland.

Telegraphic Address: "Relief, Old Catton." Telephone: "290 Norwich."

NERVOUS & MENTAL AFFECTIONS.

Ladies only received.

The Grove, Old Catton, Norwich.—**A High-class Home for the Curative Treatment of Nervous Affections. Voluntary Boarders are also received without certificates.**

For full particulars apply to the Misses MCLINTOCK, or to Dr. S. BARTON, 34, Surrey-st., Norwich, Visiting Physician.

Grove House, All Stretton, Church STRETTON, SHROPSHIRE.

A PRIVATE HOME for the Care and Treatment of a limited number of Ladies Mentally Afflicted.

Climate healthy and bracing.

Apply to Dr. McClintock, Proprietor and Resident Medical Superintendent.

Park Lodge Nursing Home, Bath-road, Reading. Delightfully situated. Vacancies for Chronic PATIENTS. Special attention for mentally afflicted. Ideal rest cure. State registered nurses. Fees from three guineas. Reading 1948.

Bucks Mental Hospital, Stone, near Aylesbury.

The Visiting Committee of this Hospital can receive PRIVATE PATIENTS at a minimum weekly charge of 1½ guineas. No vacancies for female cases at present.

Apply to the Medical Superintendent.

Will Country Doctor take Officer's SON, Slightly Mental case. Could act as Chauffeur in part payment. References exchanged.—Heauen, Hotel Michelet, Dinard, France.

London Temperance Hospital, Hampstead-road, N.W. 1.

Applications are invited for the post of CASUALTY OFFICER (Male) for six months, dating from the 15th January next, at a salary of £120 per annum.

Copies of testimonials, not exceeding three in number, should reach the undersigned on or before the 5th January, 1926.

A. C. ADAMS, Secretary.

St. Mary's Hospital, W. 2.

ASSISTANT MEDICAL OFFICER IN CHARGE OF X RAY DEPARTMENT.

The Board of Management are prepared to receive applications for the above vacancy.

Candidates must forward their applications, with copies of testimonials, not exceeding six in number, to reach the Secretary on or before 31st December, 1925.

Candidates must be registered Medical Practitioners or Graduates in Medicine of a University in the British Empire.

The appointment is for five years, at the expiration of which term the holder will be eligible for re-election.

The Assistant Medical Officer in Charge of the X Ray Department will be a member of the Honorary Staff of the Hospital.

W. PARKES, Secretary.

West London Hospital, Hammersmith-road, W. 6.—Applications are invited for the post of HONORARY OBSTETRIC REGISTRAR for a period of one year, eligible for re-election annually. The duties include the preparation of the Obstetric Registrar's Report for the year and the supervision of the records of cases. The candidate appointed must be available as substitute for the Surgeon and Assistant Surgeon for Diseases of Women and for emergency operations when required, and be prepared to undertake such teaching for the Post-graduate College as may be desired.

Candidates are required to be registered under the Medical Act; to send applications so as to reach me not later than Wednesday, 20th January next; to attend the Medical Council Meeting on Friday, 22nd January, at 4.30 P.M., and prior to that date to call upon and send copies of application and testimonials to each member thereof; to abstain from canvassing, but nevertheless to send copies of application and testimonials to each member of the Board of Management, at whose meeting on Tuesday, 26th January, at 5 P.M., candidates must be in attendance.

H. A. MADGE, Secretary.

The Hospital for Sick Children, Great Ormond-street, London, W.C. 1.

A RESIDENT MEDICAL SUPERINTENDENT is required on the 2nd February, 1926.

Gentlemen are invited to send in their application to the Secretary before 12 o'clock on Monday, 4th January, 1926, accompanied by copies of not more than three testimonials given specially for the purpose.

The appointment is made for one year, but may be held, subject to re-election, for a period of three years.

Salary £300 per annum, with board-residence in the Hospital, £10 allowance for laundry, and £18 18s. for the purpose of providing a substitute during annual leave.

Candidates must be unmarried and possess a legal qualification to practise, and must have held a responsible Hospital appointment at a General Hospital.

All candidates must be in attendance on Wednesday, 6th January, 1926, at 5 P.M. precisely, to appear before the Joint Committee if required.

Forms of application and copies of the rules may be obtained from the Secretary at the Hospital.

By order of the Board of Management.

December, 1925. JAMES MCKAY, Secretary.

St. Mark's Hospital for Cancer,

FISTULA AND OTHER DISEASES OF THE RECTUM, City-road, E.C.1.—The Committee of Management invite applications for the post of RADIOLOGIST to the Hospital, to attend on one afternoon a week. Salary £25 per annum. Applications should reach the Secretary at the Hospital not later than Monday, 11th January, 1926.

Mildmay Mission Hospital, Austin-

street, Bethnal Green, E. 2.—Applications are invited for the post of RADIOLOGIST, at present one visit per week required, Wednesday afternoon. The members of the Council are anxious that all members of the Hospital Staff should be in full sympathy with the religious work of the Hospital.

Applications should be sent to the Medical Superintendent.

Royal Free Hospital, Gray's Inn Road,

W.C. 1.—Applications are invited from duly qualified and registered Medical candidates for the post of

SECOND HOUSE PHYSICIAN.

Applications for this post must reach the Secretary on or before 6th January, 1926. All applications should be accompanied by copies of three recent testimonials, stating age and experience.

REGINALD R. GARRATT, Secretary.

The London Lock Hospital

(Founded 1746),

283, Harrow-road, W.9, and 91, Dean-street, W. 1.

HONORARY PHYSICIAN TO THE HOSPITALS.

Candidates for this appointment are requested to send in their applications, with not more than three copies of testimonials, to the Secretary, at 283, Harrow-road, W. 9, not later than January 12th, 1926. Candidates must be Fellows of the Royal College of Physicians (London). The election, which is by ballot of the Governors, will be duly announced to the candidates. No personal canvassing of the Board or Medical Staff permitted.

By order of the Board.

HY. J. EASON, Secretary.

17th December, 1925.

St. Mary's Hospital, Institute of PATHOLOGY AND RESEARCH.

Principal: Sir Almroth E. Wright.

Applications are invited from qualified Medical Practitioners for a RESEARCH STUDENTSHIP. This will be tenable for six months, and may be renewed for a second period of six months.

The Institute comprises the following departments: Anatomy and Embryology, Physiology, Pathology, Chemical Pathology, Clinical Bacteriology, Systematic Bacteriology and Immunology.

The student, who will receive an honorarium at the rate of £200 per annum, may elect to carry out his researches in any one of these departments, and would be required to work under the direction of the head of the department concerned.

Preference will be given to old St. Mary's students. For further particulars apply to the Secretary, Institute of Pathology and Research, St. Mary's Hospital, Paddington, W. 2, to whom applications must be sent not later than first post Jan. 12th, 1926.

County of London.

The London County Council invites applications for the appointment of DEPUTY MEDICAL SUPERINTENDENT at Maudsley Hospital, Denmark Hill, S.E. This hospital (161 Beds) has been established for the treatment of Voluntary Cases of Incipient Mental Disorder and provides an Out-patients' Department and a Clinic. Salary £650 a year and temporary addition, making total commencing remuneration approximately £850 a year. No emoluments.

Candidates must be registered to practise both in Medicine and Surgery in England, and unless in the London County Mental Hospital Service must not be over forty years of age. Preference to candidates who served with H.M.Forces during the late war. The appointment will be held only during the pleasure of the Council.

Full particulars and conditions of appointment on form of application (upon which alone application can be made) to be obtained from the Chief Officer, Mental Hospitals Department, The County Hall, Westminster Bridge, S.E. 1. Applications must be received by Tuesday, 12th January, 1926. Canvassing disqualifies.

MONTAGU H. COX,
Clerk of the London County Council.

General Infirmary, Salisbury.

(General Hospital of 147 Beds.)—HOUSE SURGEON (Male) required to commence duty February 1st. Candidates must be unmarried, fully qualified and registered. Salary £150, with board, residence, and washing. Applications, with copies of testimonials, to be sent to the undersigned not later than January 9th.

JOHN S. BIRBECK, House Governor and Secretary.

Manchester Hospital for Consumption

AND DISEASES OF THE THROAT AND CHEST.—Applications are invited for the post of RESIDENT MEDICAL OFFICER at the In-patient Department, Bowdon, Cheshire.

Applicants must be registered. Salary £200, with board, apartments, laundry, and railway contract to Manchester. Duties include attendance on three mornings a week at the Out-patient Department, Manchester.

Applications, with copies of testimonials, to be sent not later than January 8th to C. W. HUNT, Secretary.

Hardman-street, Manchester.

City of Manchester Education COMMITTEE.

APPOINTMENT OF ASSISTANT SCHOOL MEDICAL OFFICER (MAN).

Applications are invited from fully qualified Medical Practitioners for the post of Assistant School Medical Officer.

The person appointed will be required to devote his full time to the duties of the office, and preference will be given to those who have a knowledge of Refraction.

Salary £600 per annum, rising by yearly increments of £25 to a maximum of £750. There is a yearly allowance of £10 for travelling expenses.

The person appointed will be required to contribute to the Superannuation Scheme of the Corporation.

Forms of application may be obtained from the undersigned and should be returned not later than Saturday, 9th January, 1926. SPURLEY HEY, Director of Education.

Education Offices, Deansgate, Manchester,
16th December, 1925.

United Services Fund.

HEATHERWOOD HOSPITAL, ASCOT.

RESIDENT ASSISTANT MEDICAL OFFICER.

Applications are invited from fully qualified Medical Practitioners (bachelor) for the above post.

Candidates must have held some appointment in a General Hospital.

The present Hospital accommodation is 136 beds for the treatment of Surgical Tuberculosis and other forms of crippledom.

The appointment will be for a period of twelve months and may be extended at the end of that time.

Remuneration is at the rate of £300 per annum, together with residence, board, and laundry.

The officer appointed will be required to devote the whole of his time to the duties of the office, to give anæsthetics, &c., and generally to act under the supervision and direction of the Medical Superintendent.

Applications, stating (1) age, (2) qualifications, (3) experience and appointments held, accompanied by copies of three recent testimonials, should be forwarded to the Organising Secretary, United Services Fund, 29, Cromwell-road, South Kensington, S.W. 7, before the 8th January, 1926.

Further particulars can be supplied on application to the Medical Superintendent, Heatherwood Hospital, Ascot, Berks.

County Borough of Plymouth.

DIDWORTHY SANATORIUM, SOUTH BRENT.

RESIDENT MEDICAL OFFICER.

Applications are invited from duly qualified and registered Male Medical Practitioners, of at least three years' standing, for the post of RESIDENT MEDICAL OFFICER of the Didworthy Sanatorium (72 beds), South Brent. The gentleman appointed will be required to devote the whole of his time to the service of the Plymouth Corporation, and will be on the staff of the Medical Officer of Health, and must pass an examination by the Medical Officer of Health as to his health. He will undertake such work in the diagnosis, treatment, and prevention of Tuberculosis, and such other duties as the Town Council and the Medical Officer of Health may from time to time direct.

Candidates for the post must not be more than forty years of age, and must have had special experience in the day-to-day supervision of a Sanatorium. A knowledge of work at Tuberculosis Dispensaries will also be considered as an additional qualification, and, other things being equal, preference will be given to candidates who hold a Diploma of Public Health or a Degree in State Medicine.

The salary will be at the rate of £600 per annum, together with furnished residence and washing.

A form of application will not be provided, but candidates should state their ages and whether they are married or single. The appointment will be terminable by three months' notice on either side.

Applications, together with copies of not more than three recent testimonials, should be sent to the Medical Officer of Health at his Office on or before January 6th, 1926.

Canvassing will be a disqualification, but twenty-five copies of the application and testimonials may be forwarded to the Medical Officer of Health, Town Hall, Stonehouse, Plymouth, for the use of the Committee. R. J. FITTALL, Town Clerk.

Municipal Buildings, Plymouth, 10th December, 1925.

Southport Convalescent Hospital and
SEA-BATHING INFIRMARY.

Wanted, a RESIDENT MEDICAL SUPERINTENDENT for the above. Duly registered (administrative experience essential). Salary £600 per annum. Applications, stating qualifications, age, married or single, experience, with testimonials, to be addressed to the Chairman, before January 28th, 1926.

Victoria Hospital, Keighley.
(104 Beds.)—RESIDENT MEDICAL OFFICER required. Appointment for six months, renewable for a further period of six months. Salary at the rate of £180 per annum, with board, residence, and laundry. Candidates, who must be fully qualified and registered, should send applications, with copies of recent testimonials, to the undersigned on or before the 4th January, 1926. M. HOYLE, Secretary.

Bedford County Hospital.—Wanted
from the 15th January, 1926, for a term of not less than six months, an ASSISTANT HOUSE SURGEON, unmarried, Male, duly qualified to act in Medicine and Surgery. Salary £130, with board, lodging, and laundry.

Applications, stating age, qualifications, medical school, together with three recent testimonials, must be sent to December 21st, 1925. BEAUCHAMP WADMORE, Secretary.

Ancoats Hospital, Manchester.

VISITING DENTAL SURGEON.

Applications are invited for the above post. The successful candidate would be required to attend the Hospital when requested to do so by the Honorary Staff. Apply, giving age, qualifications, and experience, with copies of three recent testimonials. By order of the Board.
HERBERT J. DAFFORNE, Secretary.

East Sussex County Mental Hospital,
Hellingly, Sussex.

PATHOLOGIST.

Wanted at the above Hospital a PATHOLOGIST. Salary £500 per annum, with lunch and tea daily. Appointment subject to the Asylums Officers' Superannuation Act, 1909. For full particulars apply to the Medical Superintendent, to whom applications should be forwarded not later than Wednesday, 6th January, 1926.

East Suffolk and Ipswich Hospital,
Ipswich. 260 beds. 6 Residents.

Applications are invited for the appointment early in January of a HOUSE PHYSICIAN and HOUSE SURGEONS. Six months' contract.

Salary at the rate of £100 per annum, with board, laundry, and residence.

Applications, stating age, qualifications, and experience, and accompanied with copies of recent testimonials, to be sent to The Hospital, Ipswich. ARTHUR GRIFFITHS, Secretary.

Wolverhampton and Staffordshire
HOSPITAL.
(Incorporated by Royal Charter.)

A RESIDENT SURGICAL OFFICER wanted. Duties to commence 22nd January, 1926.

Candidates must have held previous post as House Surgeon in a large Hospital. Preference will be given to an F.R.C.S. of England.

The Hospital contains 210 Beds, and there are four Resident Officers.

Salary £250 per annum, with board, furnished rooms, and laundry.

The appointment is for one year, with eligibility for re-election.

Details of duties may be obtained on application.

Applications, together with copies of testimonials, to be forwarded to the undersigned forthwith.

W. H. HARPER, House Governor and Secretary.
Wolverhampton, December 17th, 1925.

Wanted, Assistant with view to
early Partnership. High-class county, Surgical and General Practice. Small hospital. Excellent prospect to keen and energetic man. Oxford or Cambridge Graduate preferred. Must have capital.—Address, No. 263, THE LANCET Office, 423, Strand, W.C. 2.

Coaching.—Wanted, Country Practi-
tioner, qualified in recent years, to receive Male Student and supervise Reading and Final Conjoint. State weekly inclusive terms.—Box 322, c/o F. Aldridge, Advt. Agent, 26, Paternoster-row, E.C. 4.

Locum Tenens Provided
at short notice.

Apply to Mr. PERCIVAL TURNER,

the oldest and only Agent who for forty years, *without agency fee to Principals*, has supplied Practitioners with reliable substitutes.

4 & 5, ADAM STREET, ADELPHI, STRAND, W.C.2.

Telegrams: Epsomian, London. Telephone: Gerrard 399.

After 5 P.M.—Tel. Epsom 335.

Assistantship wanted by M.B., B.Ch.
(Woman). Well received by patients. Experienced in eye work and mental diseases. Age twenty-six.—Address, No. 251, THE LANCET Office, 423, Strand, W.C. 2.

Medical Men, possessing their own
Bacteriological and Pathological Laboratories, can obtain trained, efficient, and experienced Women Laboratory Assistants who are also legally qualified Dispensers. Preparation for Examinations.—Apply, London College of Pharmacy, 7, Westbourne Park-road, W. 2.

Refraction and the ordering of Glasses
taught by Practising Ophthalmic Surgeon in London. £8 8s. for ten Lessons.—Address, No. 770, THE LANCET Office, 423, Strand, W.C. 2.

Mr. H. B. Hunter having had thirty
years' experience in the City with leading firm of Chartered Accountants, and as Secretary and Accountant to group of commercial companies, is prepared to make up Balance Sheets and Profit and Loss Accounts, conduct investigations, and prepare income-tax computations and claims at a moderate charge. 'Phone: Sydenham 2706.—Write, 236, South Norwood Hill, S.E. 25.

Lady requires post as Secretary to
Doctor, Specialist, or Consultant. Expert shorthand-typist, used 'phone and switchboard, seven years' experience in an education office. High school education, excellent testimonials, can give doctor's reference. Salary from £156 per annum, or its equivalent, with board-residence.—Write, Secretary, at 30, Oxford-road, Worthing.

Dancing.—Miss Evadne Newsholme,
Hotel Quebec, Marble Arch, W. 1. 'Phone: Mayfair 4791. 3060.—Three private lessons for 1 guinea; seven for 2 guineas. Classes held. Private classes of six or more arranged at reduction.

Wanted by M.D., F.R.C.S. (Ed.), a
City PRACTICE or PARTNERSHIP therein. Good experience. Finance guaranteed.—Address, No. 256, THE LANCET Office, 423, Strand, W.C. 2.

Wanted, General Practice or Partner-
SHIP. London or Suburbs. Income £1000 a year or more. Purchaser can invest up to £3000 if necessary.—Apply, Peacock & Hadley, 19, Craven-street, Strand, W.C. 2. (No charge unless sale effected.)

For Disposal.—A good Practice is not
always to be had directly, but Mr. PERCIVAL TURNER can generally offer applicants something suitable. Nearly all the best Practices are sold by him without being advertised.—Full information free on application to 4, Adam-street, W.C. 2.

£2800 buys Middlesbrough Practice.
Panel 1400. Freehold house, main road; 11 rooms. Fitted dispensary. Garage. Linos included.—Miles, Hutchinson & Lithgow, Solicitors, Middlesbrough.

Midland City. — Cash and Panel
PRACTICE, old established. Receipts about £1700 per annum. Panel 2300. Surgery with living accommodation; rent £35. Premium £3200, half by instalments.—Apply, Peacock & Hadley, 19, Craven-street, Strand, W.C. 2.

To Purchasers.—Do not Buy without expert assistance. With forty years' experience Mr. PERCIVAL TURNER can advise in all cases.—Terms free on application to 4, Adam-street, Strand, W.C. 2. Telephone: Gerrard 399. Telegrams: "Epsomian, London."

Best part West Riding City.—Old-established PRACTICE, middle-class. Panel 1900, &c. Receipts, 4 years, average £2400. Modernised corner house with garage. 2–2½ years' purchase according to length of introduction. House may be let on lease. Partnership considered with one able to buy outright later.—Address, No. 264, THE LANCET Office, 423, Strand, W.C. 2.

Excellent position for Doctor, main road, W. 2 district.—LEASE of well-built, dry Residence in good repair, light, airy. Spacious rooms, seven or eight bedrooms, four reception-rooms, two bathrooms, large kitchen, butler's pantry, good offices, constant hot water installation, gas, electric light. 11½ years' Lease at nominal ground rent £1 per annum; price for lease 1500 guineas. Two top floors are at present let for £175 per annum. Vacant possession of lower part on purchase and top floors in three months, or tenant might remain.—Address, No. 238, THE LANCET Office, 423, Strand, W.C. 2.

AN OPPORTUNITY FOR DOCTOR OR DENTIST.

Upper Clapton Road, E.—Well-built Freehold RESIDENCE of character with capacious accommodation. Suitable for Professional Man. Good residential neighbourhood. Price £1600.—Particulars and order to view of Reynolds & Eason, Auctioneers, Surveyors and Valuers, 192, Bishopsgate, E.C. 2.

WORTHING.

Grand Avenue.—Best residential road in Worthing, 80ft. wide. Excellent position for Doctor, near West Worthing Station. Practically no opposition. Large growing neighbourhood. £2700 leasehold or £3200 freehold, including blinds, linos, Electric and Gas Fittings, &c. Detached, 7-8 bedrooms, 6 with hot and cold water, 3 reception-rooms, lounge hall, kitchen, &c., redecorated; large double garage. Substantial mortgage if required.—Barton, Highlands, Grand Avenue, West Worthing. 'Phone 877.

Unique Medical Suite on Ground Floor of new building in Portland Place; beautifully furnished. Consulting and Treatment Rooms available.—Address, No. 262, THE LANCET Office, 423, Strand, W.C. 2.

H. Ley Clark & Barff, House and Consulting-room Agents, 3A, Wimpole-street, W. A quarter of a century's experience with the medical specialist.

List of Houses, Consulting-rooms, and Nursing Homes free on application. Tel.: Langham 1095.

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Specification.—Koristka Model K.T. Microscope, rigid horseshoe foot, inclinable stand, clamping lever, well balanced square stage with mechanical stage with verniers, and micrometer screw adjustment, giving maximum displacement in both directions, rack and pinion focussing, side micrometer focussing, draw tube graduated in millimeters, dust-proof triple nose-piece, Abbe condenser, swing-out movement, with iris, in focussing substage, Plano and concave mirrors, with Koristka dry objectives, 2/3rds, 1/6th and 1/12th oil immersion, N.A. 1.30 magnifications up to 1,000, complete in lock-up case, £23 17 6.

(Further particulars post free.)

Or without 1/12th oil immersion objective, £18 12 6.

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Motor, Contents of House, Servants' Sickness, Accident & Med. Indemnity.

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DIPLOMA IN PUBLIC HEALTH, etc.

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Assistant Director of Bacteriological Laboratories: E. GOODWIN RAWLINSON, M.D., D.P.H. Oxon.

Assistant Director of Chemical Laboratories: ALAN WEST STEWART, D.Sc., A.I.C., Public Analyst for Windsor, Boston, &c.

Lecturers on Public Health, &c.: ALBERT E. THOMAS, M.A., M.D. Oxon., D.P.H. Oxon., Barrister-at-Law, Medical Officer of Health for the Borough of Finsbury. GEOFFREY E. OATES, M.D. Lond., D.P.H. Camb., M.R.C.P., Barrister-at-Law, Medical Officer of Health for the Borough of Paddington.

The Course of Instruction can be commenced at any time.

The Principal will be pleased to interview intending candidates for the purpose of advice.

Further particulars can be obtained from the Secretary, 37, Russell-square, W.C. 1. Telephone: Museum 766.

Leeds Public Dispensary.—Wanted, JUNIOR RESIDENT MEDICAL OFFICER. Salary £150 per annum, with board, residence, and 4s. weekly for laundry. Applications, with copies of three recent testimonials, to be addressed to the Secretary of the Faculty, Public Dispensary, North-street, Leeds.

Warwick County Mental Hospital,

Hatton.

JUNIOR ASSISTANT MEDICAL OFFICER (Lady). Commencing Salary £250 per annum, with board, lodging, washing, &c. Subject to deductions under A. O. S. Act 1909. Applications with copies of recent testimonials to be sent to the Medical Superintendent.

Birmingham and Midland Eye

HOSPITAL.

Applications are invited from duly qualified Medical Practitioners for the post of RESIDENT SURGICAL OFFICER at the above Hospital. Salary £150 per annum.

The Resident Staff also consists of two House Surgeons, and in the event of one of these being promoted, applicants should state whether they will be willing to accept the appointment of House Surgeon at a salary of £110 per annum.

Applications, with testimonials and evidence of Registration, must be received not later than first post on Tuesday, January 12th, 1926.

C. A. MASON, General Superintendent.

Church-street, Birmingham. December 21st, 1925.

NAMEPLATES in untarnishable fumed Bronze; ivory Enamel lettering; need no daily cleaning; conspicuous but strictly professional; sample sent; state size.—Macphail Ltd., 18, Sauchiehall Lane, off Renfield-street, Glasgow.

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(Founded 1880)

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The introduction of reliable Assistants and Locum Tenens has always been the foremost aim of the Association.

RESIDENT PATIENTS.

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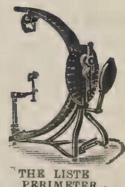

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